HQ
751
K44h
1920

HQ 751 K44h 1920

02530330R

NLM 05017331 9

NATIONAL LIBRARY OF MEDICINE

SURGEON GENERAL'S OFFICE

LIBRARY.

Section

No. 252898

No. 113,
W. D. S. G. O.

8—513

HEREDITY AND SOCIAL FITNESS

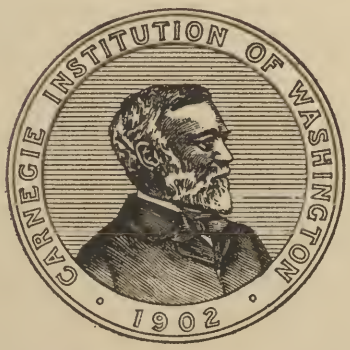
A STUDY OF DIFFERENTIAL MATING IN A PENNSYLVANIA FAMILY

BY

WILHELMINE E. KEY, PH. D.

Eugenics Record Office, Carnegie Institution of Washington

f296



SURGEON GENERAL'S
252898
LIBRARY

PUBLISHED BY THE CARNEGIE INSTITUTION OF WASHINGTON
WASHINGTON, 1920

Annex
HQ
751
K44R
1920

CARNEGIE INSTITUTION OF WASHINGTON
Publication No. 296

Paper No. 32 of the Station for Experimental Evolution at
Cold Spring Harbor, New York

PRESS OF GIBSON BROTHERS, INC.
WASHINGTON, D. C.

CONTENTS.

	Page.
Abstract	5
I. Introduction	9
II. Material and Methods	11
III. Survey of the Strains; their Founders	13
IV. Line A	16
V. Line B	25
VI. Line C	29
VII. Line D	35
VIII. Line E	51
IX. Line F	52
X. Line G	62
XI. Continuation of Line E	71
XII. General Summary of Lines	77
XIII. Heritability of Socially Effective Traits	78
1. Calculating Ability	78
2. Aggressiveness	82
3. Perseverance	84
XIV. Statistics	86
1. The Population Considered	86
2. Comparative Efficiency of the Several Lines	86
3. Comparative Fecundity	88
4. Comparative Survival	89
5. Differential Migration	89
XV. Relative Effect of Environment and the Blood	91
XVI. Marriage Selection	94
XVII. Immigration	97
XVIII. Conclusion	100
Reference	102

ABSTRACT.

The object of this investigation was mainly twofold: First, to determine the mode of evolution of the various lines of a great network with reference to traits which have direct bearing on social efficiency; second, to study the variation in the grade of these traits and the relation of this variation to the types of mating. An answer was sought to the following questions: By what process does marked defect, such as lack of number-sense, or aggressiveness, disappear from some lines and persist in others? What measure of improvement is directly effected through selected matings? The data collected were further used to draw conclusions concerning comparative fecundity, comparative survival, differential migration, and various contentions of our immigration problem, and, finally, our conclusions were considered in their bearings on the present-day program for race betterment. The study comprises 1,822 individuals, nearly half of whom are in the direct line of descent from two pairs of German immigrants of more than a century ago. The remainder were considered in connection with the strains into which the descendants of these couples married. The research began with 4 young people, patients at the Institution for the Feeble-Minded of Western Pennsylvania, at Polk, Pennsylvania. When the wide variability of the material with reference to socially efficient traits became apparent, the study was extended to all so-called normal lines of the two networks, and a further attempt made to grade the individuals in calculating ability, aggressiveness, and perseverance.

The first network, comprising lines A to E, was founded by an honest, aggressive, plucky, persevering, far-sighted man and his amiable easy-going wife, who was totally lacking in sense of number and proportion. This network breaks up into widely divergent lines.

Line A, founded by the slow, stupid, non-aggressive, but persevering eldest son and an irritable, sexually immoral wife of average mentality, increases its aggressiveness, perseverance, and calculating ability by marriage into stocks showing these traits. The condition of all representatives of these lines, with one exception, is average or above the average with reference to these traits. The exception is furnished by a marriage into a degenerate line of the same network.

Line B was founded by a non-aggressive, non-persevering son with some calculating ability. His wife was able, but sexually lax. Their only child, a daughter, appears to have escaped the serious defects of both parents and has founded a line showing fair aggressiveness, perseverance, and calculating ability. Sex morality is characteristic of this line.

Line C was founded by the most able member of the fraternity and his able, aggressive wife, who came from stock showing these traits in good measure. Subsequent marriages into good stock has brought about complete elimination of the defects of the founders and corresponding economic worth.

Line D, founded by a son who resembled closely the founder of Line A, has, through marriage into sex-offending, alcoholic, criminalistic stock, broken up into very degenerate branches. Aggressiveness and perseverance remain low, and in many instances the original number and proportion defects reappear. All living representatives of this line, with one exception, are at large and a hindrance to the moral and economic growth of their communities.

Line E, founded by the youngest son, furnishes an instance of the persistence of defect through disadvantageous mating for five generations. All members of this line have been markedly defective, most of them to the point of imbecility; living representatives, with but one exception, are receiving custodial care.

The second network, comprising the lines F and G, was founded by two sisters who were noted for their strength and stature, good nature, and mental slowness. Through marriage into widely differing stocks, Line F appears to be breaking up into incipient strains, some of which are marked by imbecility, others by eccentricity, and still others by increasing social efficiency. In Line G a condition of marked mental retardation, where average mentality was not reached until early middle life, is being replaced in some branches by a normal rate of mental growth. Where this acceleration occurs there has been mating with stocks which show normal rate of mental development. Thus the effect of marriage selection is made clear in serving to dissipate defect in some lines and thus increase their social efficiency and to concentrate degeneracy and defect in others.

The behavior in inheritance of calculating ability, perseverance, and aggressiveness would indicate that the occurrence of various grades is due to a segregation of determiners for these traits. A study of comparative fecundity and survival shows a decided decrease in fecundity in all lines, which, however, is no more marked in the socially efficient than in the inefficient lines. The survival ratios, on the other hand, increase for the successive generations of the efficient lines, while they decrease for the inefficient lines, thus illustrating Nature's method of eliminating the unfit.

With reference to migration, the tendency of the normal to push out into new sections of the country and under adverse conditions develop its resources, leaving the slower and more dependent to be supported at public expense, is amply illustrated. The lines A, B, and C, taken collectively, have only 3 living representatives at the original place of settlement; 42 are still within a radius of 50 miles, while the remain-

der, numbering nearly 200, have migrated as far as North Dakota, Idaho, Alberta, and California. In the defective and degenerate lines D and E only 3 have migrated beyond eastern Ohio; 16 are in towns which are from 50 to 80 miles distant. The rest are all concentrated at the original places of settlement, or in nearby villages. Thus, by far the greater number of socially fit have moved out into other sections of the country, and there, under more severe conditions, are developing its resources, adding to its wealth, and contributing to its education and moral growth. The socially unfit, on the other hand, have been left behind to become a drag on economic improvement and a burden on a charitable public.

A study of the reactions to social environment in the degenerate branches and analysis of cases which were given improved opportunities shows the variation in efficiency to be due, not to the adverse conditions of congested city life, nor primarily to the isolation of the backwoods, but to the cumulative effect of the mating of defect with the defects of other bad strains; and low efficiency has rarely been due to a lack of opportunity, but is to be traced rather to a native inability to take advantage of even a favorable social and economic environment.

The study throws interesting light on matters of dispute in our immigration problem. Amalgamation and assimilation have been complete, but these processes consist in the marriage of individuals of high potentiality with the better native stocks and the adoption of their standards and ideals, while those of low potentiality have gravitated toward native inferior stocks and by their marriage brought about a diversification and intensification of original defects and corresponding low standards.

Pauperism does not appear until the third generation, and then only in certain lines, where it increases in ensuing generations. It is thus not due to any difficulty in coping with strange and adverse conditions such as confront the newly arrived immigrant, but rather to an inherent inability to take advantage of favorable conditions. This inability is again traceable to the mating of low grades of a trait with low grades of the same or similar traits.

The whole history points to the necessity of devising more careful tests for the sifting out of our immigrant population, and to the wisdom of supplementing these by studies abroad which shall serve to locate notorious strains, and studies here which shall follow up cases that threaten to found bad strains. It reemphasizes the usefulness of segregation for the markedly defective and of some colonization scheme, together with sterilization, for certain types of the socially unfit; and finally, it suggests the advisability of a board of control with authority to prohibit marriages of a cacogenic sort.

HEREDITY AND SOCIAL FITNESS.

A STUDY OF DIFFERENTIAL MATING IN A PENNSYLVANIA FAMILY.

I. INTRODUCTION.

To the student of eugenics, as well as to those whose chief interest is the practical application of its principles, there appears to be urgent need of further research into the mode of inheritance of socially effective traits. In this field, methods of study that handle characters in the mass, without regard to the varied potentialities of the strain to which the individuals belong, can avail but little. The vital questions for those who seek to make eugenics a practical science will always be: Given two parents of known ancestry, with reference to certain traits; how will these traits be distributed in their offspring? By what process may traits that represent lower efficiency be eliminated from the strain and such traits established as make for higher efficiency? The laws derived from mass studies afford no answer to these questions. For their ultimate solution there is needed analysis of the types of matings in families for successive generations and observation of the effects of matings on the inheritance of such fundamental characteristics as directly affect the efficiency of the individual.

This analytical method of study has been followed with success in a number of researches. We have in such histories as those of the Edwards, Jukes, and Kallikak families an account of great strains of the socially fit or the unfit as they have been determined by hereditary causes. In the more recent studies of the Hill Folk and the Nam family, published by this Office, closer analysis was made of the individual and the strain to which he belonged. Evidence was given there of the establishment through selected matings of pure lines of degenerates. The present research has been carried along similar lines with the added attempt to make a roughly quantitative estimate of certain socially effective traits as their transmission was followed from generation to generation.

We have here the story of two pioneer families traced through five and six generations from their earliest planting on American soil. An effort has been made to express the social efficiency in terms of the leading traits of their members and to view their economic worth as a reaction between these traits and the environment. There are no eminent men and women in these families, no notorious criminals;

they belong for the most part to our great middle class. Still, their history shows the establishment of lines which vary greatly from the standpoint of social efficiency. The history of each line has been traced as it moves up or down through matings made under the eugenic conceptions of the time. Moreover, since these families trace back to immigrants of more than a century ago, they furnish concrete cases bearing on the contentions of our immigration problems.

The study began with four young people, patients at the Institution for Feeble-Minded at Polk, Pennsylvania. It had not proceeded far before the wide variability of the material became apparent, especially with reference to sense of number and proportion, general mental ability, and such traits as aggressiveness and perseverance. The investigation was then carried back to the founders of the families and extended to include all individuals of their normal lines so far as they could be determined. The whole has been viewed as a complex experiment in marriage selection, whereby strongly contrasting lines have arisen. Their evolution, it is felt, suggests an answer to our question as to the means by which original defects, on the one hand, persist in a family, or, on the other hand, are made good by traits which insure increased social efficiency.

No one can feel more keenly than the author how far she has fallen short of her ideal in this work. It is offered simply as an imperfect attempt along relatively new lines, and in the hope that it may serve as stimulus to more exhaustive and critical studies in the same field.

Grateful acknowledgment is made to Dr. J. Moorhead Murdoch, Superintendent of the Institution for the Care of the Feeble-Minded of Western Pennsylvania, Polk, Pennsylvania, for according the author exceptional facilities for this extensive research as well as generous interest in each step of its advance, and to the staff of officers and teachers for cordial cooperation at all times. She also wishes to express her continued indebtedness to Dr. Charles B. Davenport, Director of the Eugenics Record Office, who has given new direction to an earlier interest in the study of heredity and who has followed the course of these inquiries with encouraging suggestion and helpful criticism.

II. MATERIAL AND METHODS.

The data for this research were gathered during the summer, autumn, and winter of 1913-14. By far the greater number of families studied are scattered through the rural communities of Western Pennsylvania within easy reach of the Institution for the Care of the Feeble-Minded, Polk, Pennsylvania. It has thus been possible to be in and out of the many households as a familiar visitor and to gather first-hand much evidence on the points involved.

The population of these communities has remained comparatively stable since their founding over a century ago. It has included, too, a considerable proportion of intelligent people to whom the eccentricities and defects of the inferior lines have been of interest. Sayings and doings have been treasured up which throw much light on the personalities of earlier times. In the better lines an interest in genealogy has materially helped in the investigation.

A system of vital records had been in operation in this State only seven years, but wherever records of wills and deeds and registers of charitable agencies are accessible they have been consulted and the data checked against the results of personal interviews. In a few instances information has been given by letter; but here great precautions were taken to establish the reliability of the informant and the data checked by extensive cross-reference.

In estimating the character and abilities of the members of this network, chief reliance has been placed on what may be called the social test. This test has obvious faults and limitations, but in the present instance it appears to be the only one available. No tests have yet been devised which satisfactorily gage the personality or measure many of the traits most essential to human progress. The application of those already in use was impracticable in most cases. While it would no doubt have contributed to the standardization of estimates so far as the present generation is concerned, the fact that it could not be applied to the majority of persons made it seem unwise to apply it in any case.

The social test has reference to social efficiency. Briefly defined, the socially efficient individual is one who bears his own weight and does something more for the welfare of his fellows. To speak in biological terms, he is one who, through reasonable adaptation to his environment, succeeds in maintaining himself and contributes his share to the maintenance and further development of that environment. The power to do this involves the interplay of many factors, and it is well to bear in mind that the complex organization of society makes possible an almost infinite variety of combinations of these factors to attain the end desired. It is possible, however, to enumerate certain essential factors. To be socially efficient, the person must be in the

main physically sound and mentally able—that is, capable of understanding the nature and possibilities of his environment; he must show some degree of aggressiveness and perseverance in his course of action, and possess moral standards which bring his course of life into proper relation with the efforts of others. In applying this test we have had regard to the balance of all these factors, but because certain of these essential traits, namely, calculating ability, aggressiveness, and perseverance, were noticeably present or absent in the founders of the various lines and their evaluation in relation to extraneous influences less difficult than in the case of many other traits, especial attention has been directed to them. In this way, two great networks have been outlined, numbering, all told, 1,822 individuals.

In surveying such an extensive network it is obviously out of the question to balance accurately all the factors which go to the making of the complex individual. But far from giving up such an undertaking as futile, it has been found profitable to attempt to group these individuals into classes with reference to these traits or types of reaction. It is felt that in the absence of such objective measurements as modern psychology is attempting to develop, a balancing of evidence as to these reactions in a fairly uniform environment gives results which are valuable for human genetics in its present state of development, and may even point the way to the more critical methods of the future.

III. SURVEY OF THE STRAINS; THEIR FOUNDERS.

In the latter part of the eighteenth century there came to a fertile section of western Pennsylvania a German immigrant, Aaron Rufer[1] by name, with his wife and three small children. They acquired there, either by purchase or grant, 400 acres of land, which they cleared in great part and farmed successfully for a period of 30 years.

Aaron was shrewd, honest, plucky, persevering, and progressive. He never learned to read or write English; he signed his will with a cross; but it is said that he had a fair education in his native tongue. The conditions of his will, drawn up in 1828, only a few years before his death, show prudence and foresight. That he had, in addition to these qualities, great strength and physical courage, is indicated by the story that in his old age he once caught a live otter and in spite of its biting and scratching carried it to the village half a mile away. Nothing is known of his ancestry, but all available accounts would lead us to regard him as a fair specimen of that splendid pioneer type which has been so important a factor in the development of this country's resources.

Hardly as much can be said of his wife. "Aaron had married her for the dowry she brought him," is asserted by some, while one informant insists that since she had become pregnant by him without the intention of marriage, he "stood by her" and "set matters right" by making her his wife. She was totally lacking, it would seem, in any sense of number and quantity, for before Aaron went to work in the morning he had to measure out the proper amounts of meat and vegetables for the family dinner. This done, his wife would "get a sort of a meal." Their log cabin was built with two wide openings hung with sacking, so that a horse might drag in the logs which fed the great open fire, and in the absence of doors the family pig ran in and out and warmed itself, first on this side, and then on that—a condition of affairs decidedly below the standards of the pioneer community. Furthermore, with her lack of neatness and accuracy, Aaron's wife could neither sew, spin, nor weave acceptably. Aside from these defects, however, she is said to have been a pleasant and obliging neighbor and a faithful, hardworking wife and mother.

From Aaron and his defective wife were derived seven children, who may be designated as Isaac (II–1, Chart A), Jared (II–3, Chart A), Ellen (II–7, Chart A), Stephen (II–9, Chart A), Darius (II–11, Chart A), Dorcas (II–13, Chart A), Herman (II–14, Chart A).

When Aaron died, about 1830, he was able to leave to each of the four youngest a farm of 50 to 70 acres of cleared land without incumbrance. He also bequeathed to his daughter Ellen $50 and to Isaac and

[1]All names in this history, surname as well as Christian, are fictitious.

Jared each $2, "with what he has got"; and appointed a guardian "over the old woman, Herman, and Dorcas."

The eldest son, Isaac (II–1), was a faithful, plodding, non-aggressive man with little ability to plan and calculate. He married an aggressive woman of average ability to calculate, but who lacked nervous and sex control and came from a family showing alcoholism and nervous instability. Their six children (III–1, 2, 3, 5, 7, 9) were very diverse, and through their marriages gave rise to branches widely divergent in respect to these traits. They will be considered in Line A.

The second son, Jared (II–3), had, like his brother Isaac, little ability to plan and calculate and was besides shiftless and dishonest. The wife was fairly aggressive and persevering, but sexual looseness on her part brought into this family two illegitimate sons of known paternity. They bore the name of Jared Rufer and were brought up as his own. The posterity of these children furnishes some conclusions on the relative value of blood and environment. They will be considered under Line B.

The third child, Ellen (II–7) is said to have had in fair measure calculating ability, aggressiveness, and perseverance. She married early, removed to another State, and became lost to the rest of her family.

The third son, Stephen (II–9), showed fair ability to calculate. He was nonaggressive but overpersevering in tasks set him by others. He married a shrewd, aggressive, persevering woman belonging to a strain showing the same traits. The defects of his mother have not appeared in later generations of his line. They will be considered in Line C.

The fourth son was Darius (II–11), nonaggressive but faithful and plodding, with low ability to calculate. He married the aggressive, industrious sister of his brother Isaac's wife. Their children, who were very diverse and married into different strains, cause this line (D) to break up into divergent branches, some of which are decidedly degenerate.

The remaining children of Aaron, Dorcas (II–13) and Herman (II–14), "didn't know anything at all." With commendable foresight their father thought to provide against their marriage by appointing a guardian, who was to see that his wishes were carried out. Dorcas never did marry and was kept by her brother Stephen until her death. Because Herman had been left a good farm, designing people arranged a marriage with him in order to provide a home for a woman who was deficient mentally and sexually lax. They were the progenitors of Line E. Their four children were all defective in ability to plan and calculate, though some showed a degree of aggressiveness and perseverance. Two died without marrying; the remaining two married into lines belonging to the second network shown on Chart B, an account of which is given in the following paragraph.

About the time Aaron and Mary Rufer came to this country, another couple, whom we will call Thomas and Martha Riel, also of German descent, settled in an adjoining county, where they owned a small farm. Both were very tall and possessed great physical endurance. Thomas belonged to a good fraternity, but had certain vagrant, irresponsible tendencies, which made him slip away and leave to his wife the care of the farm and the bringing up of their twelve children. These children, too, were noted for their great strength and stature, and this in some measure was combined with extreme shyness, good nature, and mental dullness. Four of them died without marrying, and six married into fair strains, which are, in the main, socially efficient. Their history is not included here. Two daughters (Chart B, II–2, 4), among the dullest and slowest of their fraternity, but possessing great strength and endurance, married into defective stock. Their descendants show certain characteristics in marked contrast to the former network and will be considered under Lines F and G.

IV. LINE A.

Founded by Isaac (II–1), eldest son of Aaron and Mary Rufer, born about 1791, in Germany. He was defective in sense of number and quantity, never able to read or write, but was, however, industrious and capable in rough work. He married, much against his father's will, II–2, who was from another part of the State. She is described as a "very devil," sexually immoral, violent, vindictive, with no interest in helping her husband and children in any way. When her father-in-law carried out his threat of disinheritance she waited until his barns were filled with the year's harvest, then set fire to them and burned them to the ground. She came from a strain showing much alcoholism and nervous instability, but no marked mental defect. Although Isaac worked very hard for the farmers around him, he never managed to own anything, owing to his wife's wastefulness and indolence. She also took $500 in preference to a farm of 75 acres and a yoke of oxen, which might have come to her from her father, and spent the money on herself. For want of warm clothing in the winter, Isaac caught colds, developed tuberculosis, and died. His wife went to live with other men, and their children were scattered.

Of the children, two sons (III–1, 2) did not grow to manhood, or were so early lost track of that they are dead to the rest of the family. Those remaining were:

Stephen (III–3), moderately aggressive, very persevering, able to plan and calculate;

Sophia (III–5), of "limited mental capacity," but chaste, fairly aggressive, persevering and capable in practical things;

Maria (III–7), of low mentality, sexually immoral, with very little ability to plan and calculate, though fairly aggressive;

Jared (III–9), industrious, but slow and stupid, non-aggressive.

Two members of this fraternity are thus seen to be decidedly superior to the other two. We will now take up these four in turn, consider their characteristics and those of their consorts at greater length, and trace their descendants to the present generation.

The eldest child was Stephen Rufer (III–3), born 1816, died 1889. Dissatisfaction with his treatment by the family who sheltered him led him to go with his sister to his mother's people in a distant part of the State, whence he returned in 1853 to S., which is 5 miles from the old Rufer homestead. He learned to read and write, took a course in book-keeping, and was able to keep accounts; had habits of industry and sobriety; was a cobbler and farmer, and exceedingly pious. Had a too simple trustfulness, which made him fare ill in a sharp business deal.

His wife (III–4) was famous in the community for her nursing and her great strength. She is described as a great, strapping woman, who could stoop from a bushel measure and shoulder a sack of grain, a feat

impossible to most men. She was decidedly superior to her husband in shrewdness and aggressiveness. In the course of time they saved enough to buy a farm of 30 acres and put up a very decent frame house on it. Both Stephen and his wife lived to a good old age, and had the respect of their community for honesty, industry, sobriety, and neighborliness. Their boys were considered very queer and backward, refusing to talk like anyone else, but "finally came out pretty well in spite of this." Of their two daughters, one was able, the other deficient in ways which will be described later. Considering the children of III–3 and III–4, in order of birth we have:

IV–2 born 1841. Came with his parents to S. when 12 years old; attended the winter term of school there until 20 years old and worked on the farm in the summer; enlisted in the Union Army September 1861; was wounded on the battlefield of Fair Oaks, where he lay uncared-for for two and one-half days; discharged June 5, 1862, and returned home, where he resumed farming. This he has followed with some interruption until a few years ago, the greatest change being to canal-boating for four years. He is known for three things: his profanity, his benevolence, and his proneness to make bad bargains. "He can swear like a trooper, but has got more real religion than his psalm-singing miracle-working brother." Although twice married, he has never had any children of his own, but has made his home a refuge for many persons whose names appear in this history. He is continually making bad bargains, going to auctions and buying things which he can not possibly use, at absurd prices, or getting taken in on a deal in real estate. He draws a pension of $75 a month, and his neighbors say "he would make more money staying at home and lying abed than doing as he does." Has lately[1] gone with his second wife in a new venture in land in the South. He is aggressive, with fair ability to calculate, but lacks judgment and perseverance.

His brothers were: IV–4, born 1843, and IV–5, born 1845. Both showed fair ability at school and were of moderate aggressiveness and perseverance. Enlisted and lost their lives in the Civil War.

His sister (IV–7), born 1847, died 1912 of old age. Was brought up by her parents. Described as silly and queer, incapable of learning anything at school and always owned it frankly, saying, "I just took after Pap's folks; the little I learn one day I forget by the next." At 37 she became the second wife of an old man (IV–6), who was rather slow and stupid, but had no marked mental defects. He died when their only daughter was 2 months old, and she returned to live with her parents. At their death she received as her share a fine orchard. Although a fair housekeeper and seamstress, she knew nothing whatever of "figuring or making a deal." She allowed her brother to wheedle her out of the title to her land, and, when she was no longer wanted in

[1]At the date of this study, 1913–14.

the household of her immoral alcoholic daughter, died broken-hearted in the county home.

This daughter (V–1), born 1884, has married a very defective member of the inferior Line D of this network. She was always regarded as "silly and queer," but of better mentality than her mother. Was able to learn by dint of great effort, which she rarely put forth. Advanced to the sixth grade in school and at 17 married her third cousin (V–2) belonging to the degenerate Line D. He went to school scarcely at all; is boorish, ignorant, irascible; working very irregularly at teaming, section work, or other odd jobs. Both husband and wife drink heavily, quarrel frequently, and make their house a rendezvous for the worst characters in the neighborhood where they chance to live. They move often, sometimes under coercion, and at present occupy a dilapidated house in E. Visitor found the family gathered in the dirty, disordered living-room, whose only furniture was an old couch piled with rags, a cupboard with sagging doors, and two or three rickety chairs, soiled clothing, and a few broken playthings scattered about. A view of three adjoining rooms disclosed a similar condition of squalor. The husband smoked and buried himself in the evening paper, vouchsafing little more than an occasional growl of correction or remonstrance to the wife's voluble account of themselves. She is nervous, fairly plausible, childishly fond of stir and commotion.

Three timid, backward girls are the only ones left of nine V–1 has borne in the past 11 years. Of these, the first died at 5 months of spinal meningitis, the fourth at 18 months of dropsy, the last two have died mysteriously of "blood-poisoning" when a few days old, while the two others died and were buried by the parents in the night and without ceremony. The three living are:

VI–1, born 1902; small for her age and shy, appearing to be about 7, large mouth and teeth, retreating forehead and chin, rather vacant expression. In second grade at school, reads a little and knows a part of the table of fours.

VI–3, born 1906; appears to be 4 or 5 and resembles her sister in looks. Has never been to school.

VI–5, born 1908; at 3 could neither walk or talk, but now runs about, talks, and can count to 6 or 7. A rather attractive child, though dirty and uncared-for.

This branch is by far the most deficient of the line; all other branches, save that engendered by the sexually-immoral daughter of Isaac, showing a decided upward trend.

The second daughter (IV–9) of Stephen Rufer, born 1850, died 1878; was an average pupil in school, and became a thrifty, capable, fairly intelligent woman. Married IV–8 upon his return from the Civil War and lived on a small farm. A severe cold, caught after the birth

of her second child, was followed by tuberculosis. IV–8 is of very moderate ability and belongs to stock showing average aggressiveness and perseverance, and, moreover, in this branch much irascibility. Their children number five (V–3, 5, 7, 9, 11).

V–3, born 1868, a woman of average mentality, aggressiveness and perseverance, with good business sense. Has married a man who is slightly alcoholic and somewhat her inferior in the traits mentioned, but who belongs to a strain showing these traits. They own a good farm and conduct a meat market. They have two children. The son (VI–10) is an electrician, occupying a responsible position in a distant State. The daughter (VI–11) received normal training, taught several terms, and is now well married.

V–5, born 1870; dull and backward at school, but kindly, honest, hard-working, with some mechanical ability. Married, 10 or 12 years ago, IV–12, who belongs to Line D of this history. Worked a farm until, his wife's health failing, they moved to town, where he is fireman at a State school. Living comfortably in a good frame house for which he is paying with some help from his wife and step daughter. Has no children.

V–7, born 1872; an average pupil at school, but developed no special abilities and is inclined to be nervous and domineering. Married V–8, said to be of good family, and living on a farm. Their three children, VI–13, age 8, quick in her studies and already very deft with her needle; VI–14 and 15, ages 5 and 3, are bright and being carefully brought up.

V–9, born 1874; fairly good pupil in school, though unsettled in occupation until he was married. Has become a switchman on the railroad. His wife V–10 is capable and of good family. Three children (VI–16, 17, 18) are progressing well at school.

V–11, born 1877; died at 7 years, of diphtheria.

The youngest son (IV–10) of Stephen Rufer, born 1852, has lived all his life on the 30 acres originally purchased by his father, which he now operates as a truck farm, selling his produce in nearby towns. Is pleasant spoken, active, loquacious, and fairly intelligent. Makes a considerable show of his piety, going even so far as to claim the power of working miracles; yet his customers maintain that in spite of his "sanctification" he gets the better of them in all sorts of ways. It is claimed, too, that he worsted both his father and sister in getting possession of the homestead. Has married IV–11, whose family is said to show no marked constitutional defect but heart trouble. Her father had much ingenuity as a blacksmith. She is illiterate, but alert, practical, hospitable, taking an active interest in the church and the social affairs of the simple rural community where they live. Her house apparently has known few changes in a generation; little furniture, and that faded and worn; the yard a tangle of tall grass and

roses running wild; picturesque on the whole, rather than orderly or neat. The children of this couple were not sent to school very regularly, since the parents have little faith in "book-learning." They are:

V–12, born 1879, died at 2 years, diphtheria.

V–14, born 1880, has some mechanical ability and was able to progress at school; has always been wavering and uncertain in purposes and plans; he has wandered about a great deal and been slow in settling to any regular occupation; married, first, V–13, and had to flee the country because he forged her father's name; has been a carpenter, and a fireman, and now lives with his second wife temporarily on a rented farm near his parents. No children by either marriage.

V–16, born 1882, a big, good-looking fellow with the trusting, easy good nature of his grandfather, and showing only moderate judgment, determination, and ambition, has several times attempted work in the machine shops in G, but given it up when it was hard or when there was danger of his taking cold; is at home unmarried and doing most of the work on his father's farm.

V–18, born 1883; a girl, illiterate, but obliging, industrious, alert; she has married V–17, who belongs to a large, strong, fairly aggressive family; he is a blacksmith, fond of fine horses, and works a small piece of ground set out to small fruit and vegetables; appearance of place and standards of living on a par with those of the parents. The children of this couple: VI–19, born 1907, and VI–20, born 1908, appear active and of average mentality.

V–20, born 1885; the most capable and aggressive member of this fraternity; he went to school very little, "he was so anxious to get a business of his own"; has much mechanical skill and shrewd practical sense, and has acquired an interest in a sawmill near M; his mother is very proud of the fact that he has charge of the entire plant, books and all, and says she would defy any of his old friends with their fine schooling to get the better of him in a business transaction. Has a daughter by a former marriage and has since married V–21, belonging to an intelligent, progressive family. They have two sons and a daughter (VI–22, 23, 24), all reported healthy and of normal mentality.

V–22, born 1888; of fair ability in school and always steady; he has married V–23, a sister of his brother's wife (V–21), and has one son and two daughters of good mentality; is described as energetic and ambitious, having great pride in the possession of good stock and fine horses, and has recently bought a farm of his own.

V–24, a girl born 1897; pleasant, practical, and helpful, but unambitious as far as school is concerned; still in the eighth grade.

Let us return now to the second generation and consider the chaste Sophia, elder daughter (III–5) of Isaac Rufer. She went with her brother to another part of the State, and was brought up by her mother's

people. She is said to have been of limited mental capacity, but was chaste, hardworking but rather slow, and capable in practical affairs. She married III–6, a thirfty, industrious farmer in that section, whose family has been traced back three generations to a prosperous merchant in an eastern metropolis. Of their four children, two (IV–12, 13) died in childhood. The surviving daughter (IV-15) left a son (V–27) of average ability, and an illegitimate daughter (V–25), who has little foresight or perseverance. The surviving son (IV–17) was a farmer, thrifty, hardworking, fairly intelligent, with good business sense. He married into a strain showing these traits. Two of the children (V–31, 32) from this marriage died in infancy: a son (V–28), who was strong and mentally alert, died at 13 of measles; the remaining children, one son (V–29) and three daughters (V–34, 37, 39) are fairly intelligent and progressive. The youngest has recently married. The remaining three have promising families and are among the better citizens of the communities in which they live. They have well-cultivated farms or follow various trades.

In his marriage to Sophia, III–6 was considered to have married beneath himself. Other lines of this family show, in contrast to this average ability of his branch, superior intelligence and certain special abilities. Several members have had marked success in business: two were able attorneys, one is president, another secretary and treasurer of a large savings bank, two others have been prominent in the iron and steel industry. A branch of the family, which removed to a western State, is successful in business and the teaching profession. It would thus appear that while marriage into a superior strain has resulted in general improvement for the Rufer family, it has entailed relative deterioration in efficiency for the strain into which marriage took place.

Let us return now to trace the descendants of III–7, the sexually immoral daughter of Isaac Rufer. She was born in northwestern Pennsylvania about 1820 and remained in this part of the State; was a coarse, licentious girl, who knew nothing but how to keep house in a crude fashion. Married III–8, a fairly capable man, whose family is described as "queer and none too good." His first wife was bedridden for several years before her death. III–7 did the housework and had two children by him before his first wife's death. They stopped at the parson's and were married on the way home from the funeral. Their children will now be considered in order of their birth:

IV–19 was born about 1842. Has been able to farm in a fashion, but had little ability to learn in school and never showed any business sense. Married a woman belonging to Line F (III–38).[1] She is said to have been an illegitimate daughter of II–2, Chart B; her father's

[1] Error in Plate. Dotted line should run to III–38.

family being of good mentality. Was far superior to her half-brothers and sisters, sensible, obliging and a neat housekeeper. Their eight children (V–40, 42, 44, 46, 48, 50, 52, 54), who will be considered at length under Line F, show ability above their father's. The sons are in the employ of the railroad as carpenters and contractors. The daughters are good housekeepers of fair intelligence, with well-kept families.

IV–21, second son of III–7, born about 1845, is ignorant, shiftless, and a ne'er do well, but not so stupid as his elder brother. Never went to school much and was working as a day laborer when he fell in with IV–22, a student of an academy, whose family was far superior to his, including successful teachers and professional men. Their marriage was a forced one. He managed to work quite steadily during his wife's lifetime, but after her death, which was from tuberculosis, reverted to his old ways, taking little responsibility for his family. The girls went to work among strangers at an early age, while the boys have drifted about, trying first one thing and then another. All show fair capability in school work, and but little inclination to profit by it.

V–56, born 1874, had little schooling, but grew to be a large, fine-looking, plausible woman. At 13 went to work on a large farm in a neighboring State, where the son of her employer (V–57) fell in love with and married her. His family are extensive land-holders and among the most intelligent and progressive in this prosperous section. Certain members exhibit much nervousness and excitability, and he belongs to this group. He often goes to pieces over his work, and his conversation is so rapid and shows such quick change of topic as to suggest the flight of ideas of the insane. One brother died of spinal meningitis and another is highly nervous, but there is no instance of other serious nervous disease in the immediate family. The large farm where this couple live is admirably cultivated, house and out-buildings are modern, well equipped, excellently kept. V–56 is looked down upon by the other members of her husband's family, whose standing in the community is far superior to hers. She is charged also with infidelity and falsifying. Their children are:

VI–62, born 1898; handsome, well-developed girl, just finishing eighth grade; average ability in number;

VI–63, born 1901; strong, fine-looking, excellent in number, in eighth grade;

VI–64, died, 14 months, spinal meningitis;

VI–65, born 1909; attractive and alert and making good progress in school;

VI–66, died, 14 months, spinal meningitis.

The second daughter (V–58) of IV–21 (born 1876, died 1898 of pulmonary tuberculosis) was a fairly bright girl of good reputation. Taken to

live on a neighboring farm, she was courted by her second cousin, who belongs to Line D. Her father opposed the marriage, saying he "was too smart to be a Rufer, but not smart enough to be anything else." They eloped, however, to New York, and were married. Two children (VI–70, 71) died young of tuberculosis.

The third daughter (V–61) of IV–21, born 1878, died 1898, pulmonary tuberculosis; had an illegitimate son (VI–69), who was quick, responsible, and at 18 is the yardmaster in a steel works. V–61 later married V–62, who drank, and abused and finally deserted her. Their first-born died at birth. Their daughter (VI–71), born 1897, lives alone with her maternal grandfather in a dilapidated log house. Never went to school more than a few weeks in any year, and was so stupid and incorrigible that the teacher was always glad to be rid of her. She could scarcely read or perform the simplest problems. At 16 is pretty, plausible, but wild, profane, sexually immoral, running the countryside.

V–67, the youngest daughter of IV–21, born 1880, caught cold and died at 14 years.

The sons of IV–21 and IV–22 are:

V–63, born 1882; capable if he cared to be, but drinks, is a rover, and not a man of his word; has a good wife, and for the last 3 years has managed with fair success a small farm near that of his eldest sister; no children;

V–65, born 1884; like his brother, rough, unsettled, alcoholic, at present working on the section; has separated from his wife, by whom he had two little girls (VI–72, 73); both are pretty, bright, and fond of school; VI–72 is kept by her uncle; VI–73 lives with her father and his so-called housekeeper.

The remaining children of the sexually lax Maria (III–7) were: IV–23, who "became feeble-minded after an attack of scarlet fever" and died in childhood of flux, and a son (IV–25), who has fair ability to plan and calculate; owns a small farm which he works successfully. He is eccentric and irresponsible; since his wife's desertion has consorted with various women, among them IV–4, Chart B, belonging to Line F. Her daughter (V–3, Chart B) has been attributed to him.

There remains to be considered the youngest son (III–9) of Isaac Rufer, who is said to have been slow and stupid, nonaggressive, but industrious. Owned a few acres of land and supported his family by working for neighboring farmers. His marriage to his double cousin, belonging to Line D, will be considered at length later. She was superior to her husband in ability and aggressiveness. Two of their children were decidedly above the average in these traits, and two somewhat below.

Summary of Line A.

Line A shows considerable diversity as to the strains into which its members marry. Union of its founder with a woman who was fairly able mentally but aggressive in evil and sexually lax, and belonged to a neurotic strain, produces a very diverse family whose differences are further accentuated by environmental influences. Their mentally deficient sexually immoral daughter mating with a sexually loose man had children showing lack of sex control in the proportion of 2 out of 3. Later unions of these with members of strains showing superior ability to plan and calculate bring about advance so far as these traits are concerned but a persistence in the lack of sex control. The two members of generation III who were superior in calculating ability and perseverance but still low in aggressiveness married into strains showing at least an average of these traits, and the condition of subsequent generations with reference to these traits is considerably improved, except where the sole defective daughter, through marriage into a weak strain, carries on the line for deficiency in calculating ability and perseverance. The remaining members of this line show a good average of social efficiency considerably above the condition of the family three generations ago; while in several cases the combination of mechanical ability and special calculating ability with aggressiveness is bringing the individual possessing the fortunate combination marked success.

V. LINE B.

Founded by Aaron's second son, Jared Rufer (II–3), born about 1793; died about 1852. He received from his father a good farm of 70 acres, but was shiftless, incapable, with pilfering propensities, lacking in sense of number and quantity, and known to have stolen lumber. Used to turn his cattle into his neighbors' pasture after dark. His wife (II–4), who died before him, had a sense of number and quantity; was otherwise of normal mentality and superior to her husband in aggressiveness and perseverance. Nothing is known of her family. She was sexually immoral, so that at least 2 of her 3 children are attributed to other men. It is asserted on good authority that the resemblance to the supposed fathers, in regard to both physical and mental traits, was so close as to leave no doubt of their paternity in the minds of all who knew them. The only child of whom Jared was the father was III–13. An account of her descendants will be followed by a brief history of those of her half-brothers, since they furnish several interesting comparisons.

III–13 had sense of number and quantity, ability to plan and calculate, and moderate aggressiveness. At 18, married III–12, of Irish descent, and went to the Middle West with him, where he engaged in mining. He had 3 brothers and 1 sister who were small farmers and who have left families of fair ability, showing no instance of marked nervous or mental defect. During the gold fever of 1849 he tried his fortune for 2 years in California and upon his return died of cholera. The widow supported their 4 children by sewing, and late in life married a prosperous farmer (III–14). Her children by III–12 were all able to progress at school, but were forced to leave early in order to earn a living.

The eldest (IV–36) served in the Civil War and later was apprenticed to a cabinet-maker, and went then to the Far West, where he married a woman whose family is not known; is now, at 73, an alert, active man, owner of a ranch and a cabinet-maker's shop, which are leased by his three sons (V–73, 74, 75). His eldest son (V–70) died at 8 years of scarlet fever. His only daughter (V–71) married a rancher in a neighboring State. All are known to possess fair intelligence and practical ability, but are only moderately ambitious and progressive. None of them has children.

The eldest daughter (IV–38) of III–13 earned a living at domestic service until her marriage to a young farmer (IV–39) of Irish extraction, whose family were farmers and mechanics of ordinary ability. They removed to Kansas, where they lost their farm through depredations

of tornado and locusts, when they returned to Pennsylvania; IV–39 died 3 years ago, but IV–38 is still living, a capable, wide-awake woman taking an active interest in questions of the day. Their seven children all made fair progress in school; showed few special abilities and are only moderately ambitious; all, however, are self-supporting, self-respecting, "getting on slowly."

The eldest (V–76), a successful rancher in Idaho, has an only daughter (VI–74) married, with two children of average ability.

The next (V–78) working with his eldest son (VI–75) in a steel mill. Six young children (VI–76 to 81) are making good progress in grade and high school.

The third (V–80) has not been strong since his enlistment during the Spanish-American War; he earns a living as caretaker.

The elder daughter (V–81), unmarried, has a good position in a wholesale house.

V–82 is well married and living in comfort near her mother; has two promising little daughters (VI–82, 83).

The sixth (V–82) is unmarried and an electrician.

The seventh (V–85) is employed in an automobile plant; is married, with one little daughter.

The second daughter (IV–40) of III–13 resembles her sister (IV–38) in appearance and leading characteristics. She married IV–41, the brother of this sister's husband, and is living in comfortable circumstances on a farm. Her four children (V–87, 89, 91, 93), too, all had fair school ability and showed little variation in characteristics and abilities.

The eldest (V–87) is the wife of a successful minister (V–88); they have six children (VI–85 to 90), who are being well educated.

The second (V–89) is a railroad carpenter; recently married.

The third (V–91) has married a "country squire," and has a son of 3 (VI–91).

The fourth (V–93) works his father's farm; is married, and has a son of 2 years (VI–92).

The youngest daughter (IV–42) of III–12 married and removed to the West, where her only daughter (V–95) has two daughters (VI–93, 94) reported as making excellent progress in school.

The illegitimate sons of Jared Rufer's wife (II–4) were: III–15 and III–17; they took their foster-father's name and were brought up as his own. The father of III–17 (born 1814, died 1870) belonged to a family which has since acquired most of the 400 acres of land originally owned by Aaron Rufer and much besides. They are shrewd, hard-working, and progressive, qualities which showed in III–17 also. He went to school and became a very thrifty, energetic, intelligent man. On his

father's death the small homestead passed to him, badly run down and incumbered with debt. He married III–18, who was of German origin; she was very active and strong, too. Together they cleared their farm of debt and added more land, so that at his death, which occurred at 56 years, they owned a fine farm of 150 acres. Afterwards his wife continued to live on it and work it in part. She lived to be 95 years old and retained her faculties and strength to the last, so that, even a few months before her death, she thought nothing of walking a distance of 3 or 4 miles and attending to the family marketing. Their children were:

IV–46, born about 1838, died 1911. He farmed all his life, part of the time in Wisconsin, part of the time in this State. He was a very quiet, reticent, hard-working man, strictly honest in his business dealings, but, both in Wisconsin and Pennsylvania, the burning of a barn belonging to a man with whom he had a difference was traced to him. In Wisconsin he served a term in the penitentiary for the offense. He married, but never had any children.

IV–48, born 1843, died 1912, cancer of the liver; married IV–49 (who belongs to a decent, self-respecting, but unambitious family) to whom she was superior in ambition, intelligence, and strength of character. He was a section foreman most of his life near K, where they owned a very comfortable home. Of their four children, V–99, 100, twins, died at 2 weeks of inanition; two sons (V–97, 101), mechanics of some intelligence, are steady and hard-working, maintaining their families in comfort. Each is married and has three children (VI–95 to 100), active, alert, making good progress in school.

IV–50, born 1845, is reported to have been of fair ability as a young man, but has drank heavily for years and now is rated hateful and devilish, impossible as a neighbor or business partner. When he has had a few drinks from the hard-cider barrel in his cellar he becomes very excitable and assaults the neighbors and his family. His wife (IV–51), who is a sister of IV–47, has repeatedly left him because of his abuse. The farm which he inherited from his father is neglected and encumbered with debt. The only surviving son (V–103) is known as a drunkard and wife-beater. He works around here and there at anything for a living. His wife, who came from Missouri to Pennsylvania in answer to his advertisement, is described as "lacking"; she has left him repeatedly, but always returns. Two children reported of excellent mentality, musical, are ahead of their grades in school. IV–52, born about 1848, is fine looking, clever, and an excellent business woman. Has a daughter (V–105) married, with two children. A son (V–107) roams around and is settled to no particular kind of work; has a wife but no children. A second son (V–109) of this same woman has been lost track of.

III–15 was the son of Jared's wife and a rough, irascible, profane Irishman who belonged to a neurotic family. He was able to progress at school, but was irritable and showed little ambition; earned a fair living by teaming. Went West with his half-sister and married there a woman of unknown family. Continual domestic friction, attributed in part to his nervousness, led to his suicide a few years later. His two daughters (IV–44, 45), remembered as promising little girls, have since been lost track of.

Summary of Line B.

The mating of II–4 with II–5 and II–6, men of very different type and belonging to stocks with radically different leading traits, seems to have told decidedly in the traits of the two sons. In the one case nervousness and irresponsibility; in the other, shrewdness, energy, and ambition to accumulate property are the leading characteristics. In the latter case the gain has not been permanent, such defects as alcoholism and irascibility showing themselves, though it has not been possible to analyze the matings of subsequent generations with sufficient minuteness to learn the hereditary factors. Most of the descendants of III–17 are settled in the same community as the degenerate and defective Lines D and E of this network. They hold themselves decidedly superior to members of these lines, and their defects—alcoholism, irascibility, quarrelsomeness—are in contrast to the defects which characterize these lines. The descendants of III–13, who constitute line B proper, present great uniformity, and the line is noteworthy for the non-appearance of the defects of its founders. Jared's daughter (III–13) seems to have escaped, on the one hand, the shiftlessness and number defect of her father and the sexual looseness characteristic of her mother. Marriage into stock that was free from these defects has insured their elimination in subsequent generations. None of these stocks shows aggressiveness, perseverance, or special abilities of any marked degree, and the line to which they have contributed shows accordingly only a fair average of these traits.

VI. LINE C.

Line C was founded by Stephen (II–9), the third son of Mary and Aaron Rufer. He was born in Germany 1795, died 1883. Generally recognized as the best of the fraternity. He was a man of great strength and vitality; never ill a day in his life, though he grew to be very simple and childish before his death. He was the only one of Aaron's sons who had a sufficient sense of number and proportion "to cut cord-wood." He could read and write, though he had received little instruction. He was noted for his piety and always carried a hymn-book on his visits, so that he might indulge in song-singing, his favorite diversion. In 1828 he married II–10. Her father had settled on 400 acres in a neighboring county about the same time as Aaron Rufer settled in this country. The two used to neighbor back and forth, and while each owned only one ox they put them together to make a team. II–10 was considered the moving spirit in all of her husband's undertakings, being greatly superior to him in initiative, calculation, perseverance, and skill. She belongs to a strain whose history shows much energy and ability to get on in the world. At her instigation, Stephen traded the land, which he had from his father, for 80 acres nearer her own people. She directed in great part and helped in the work out of doors; kept a clean, orderly house; made butter which she carried to the market 13 miles away and sold it at 6 cents a pound. She knew all the steps in linen-making, from the raw flax to the finished garment. She lived to be 93 years old and was remarkable for her strength, alertness, and aggressiveness to the last. This couple had five children (III–19, 23, 26, 28, 30), all of whom have been traced.

Two of these (III–19, 26) were somewhat below the average in mental ability; and, while by no means without calculating ability, always performed calculations with great difficulty. III–26 had great aggressiveness and perseverance, and at 78 is still a shrewd, energetic woman. A third (III–28) showed fair ability in school, but was weak physically, and in later life lost his property through poor business management. The remaining two (III–26, 30) were decidedly above the average in mentality, with good ability to calculate, aggressive, and persevering.

Let us follow the marriages and descendants of these five. The eldest (III–19), born 1829, died 1864 of tuberculosis. Was never strong physically nor able to progress far at school; was able, though, to perform simple multiplications and divisions and had good practical sense. Married III–20, who belonged to a strain of steady, hardworking people showing fair mental ability, including average quickness in calculation. They lived in fair circumstances on a farm. Had five children:

IV–54, born about 1856; above the average in mental ability, but having few school advantages received little education in her youth.

Was always very devout and self-sacrificing and at 20 married against her people's wishes a wandering blind evangelist (IV–55). He has a very defective brother who appears later in this history, but belongs to a family which otherwise shows good mentality. Received some education at the institution for the blind. Has a fine memory, which enables him to recite passages of the Scriptures *ad libitum*, but has never retained a charge long. He sometimes preaches good sermons, but is usually unable to keep quality up even to the end of one sermon. This couple has shown little system and foresight in the management of their affairs, and the burden of supporting their five children fell for the most part on relatives or various charitable agencies. Of their children,

The first (V–110) was a stillbirth;

The second (V–111), born 1878, shows fine memory and degree of aggressiveness. Was brought up for the most part away from home; took a civil-service examination successfully and served with credit.

The eldest daughter (V–112) lived for nearly 8 years at an orphanage, then supported herself in domestic service until her marriage. Since her husband's (V–113) death, works by the day, while her little daughter (VI–105), said to be of good mentality, is cared for by a charitable organization. An intelligent, good woman, showing some resolution and refinement. The second daugher (V–114) was also brought up by strangers; is now well married.

The second son (V–116) was brought up by the same family that cared for his sister. He showed fair mentality; was given sufficient education to teach school. The youngest son (V–117) has remained at home with his parents; shows less ability than his brothers and has never had much plan and purpose in his life nor settled down to regular work.

The second child (IV–56) of III–19, born about 1859, died 1910 of cancer of the stomach; was always a faithful, sober fellow, somewhat retarded in school, and found number work especially hard. Worked on the section and accumulated enough to buy a farm of 50 acres. Married IV–57, who was capable in her school work and belongs to a family showing fair ability. Their three children showed average ability. V–118 is a railroad operator; one of the two daughters (V–119, 121), is a domestic and the other is married to a prosperous farmer in a neighboring State. The latter has one little child.

The second son (IV–58) of III–19, born about 1861, was quicker than his brother in school work, including calculation; also more excitable. He occasionally has drunk to excess. Married IV–59, of good mentality, and now lives on their own farm of 50 acres. Their only son (V–122), born 1892, is single and living at home. Showed good ability at school work.

IV–60, 61, two other sons of this couple (III–19, 20) died in childhood, cause unknown.

III–20 later married III–21, who is still living. An alert, shrewd, kindly woman, nearly 80 years of age. Others of her family are able and progressive. The three children from this marriage (IV–62, 64, 66) showed mental ability somewhat superior to that of the children of III–20, 19, and are able, intelligent members of the progressive farming communities in which they live.

The ablest of the children of II–9 was III–22, born 1831, died 1911 of pneumonia. He was remarkable for his fine memory, and calculating ability, decidedly above the average. Was a carpenter and builder, and owned a farm. Married III–23, whose family history, carried through four generations, shows no marked mental defect. Had by her three childern who will be described later. After her death and at 40, married III–24, a girl of 18, who was quick and capable, but whose extravagance led to their separation a few years later.

Describing now the children of III–22 and 23, we have: IV–67, the eldest daughter; she made good progress at school and was ambitious for education, but, owing to her father's difficulties with his second marriage, was obliged to leave high school. She supported herself by dressmaking and married IV–68, who is a fairly energetic member of a family, in the main, well-to-do, successful in various professions in other States. They have two children (V–123, 124) who are intelligent, with ability in music and decorative arts. Both are unmarried. They all live together in a home showing evidence of good taste and culture, in an eastern city.

IV–69, the second child, was said to be the most enterprising of his fraternity. Made good progress in school, where he excelled in figures. Now prospering in the real-estate business in a distant State. Has married IV–70, who is his first cousin once removed on his mother's side, and belongs therefore to a good strain, into which his paternal grandfather married. She is said to be active, of good mentality, and of fair education, though excelled by her husband in this respect. Of their twelve children (V–125 to 138), two are dead. Two of the elder daughers are well married. A third, employed as secretary in a publishing house, is described as having splendid capabilities. Two sons are successful in practical work while the remaining children are making excellent progress in school.

IV–71, the second daughter, said to be mentally on a par with her sister, IV–67. She earned her living by dressmaking and later married an oil prospector. They have made and lost a good deal of money in ventures. Their two daughters (V–139, 142) received business training and later engaged successfully in office-work. One of them is now

married. The only son (V–141) is with his father. They own a fine home and are accounted desirable citizens of the town in which they live.

The fourth (IV–73) and youngest of the children of III–22, is described as good at figures, capable in general school work, but he had poor school advantages and early shifted for himself. Went West, where he now owns a ranch. Has two sons (V–143, 144), ages 16 and 20 years, respectively, by a wife whose family characteristics are unknown; they are said to be capable and progressive and are likewise ranching.

Going back to the third generation, we now take up III–26, the second daughter of Stephen Rufer, born 1835. She made slow progress at school where she had special difficulty with numbers; was always very active, strong, hardworking, and showed fair shrewdness in looking after her own interests. Married III–25, who was very intelligent. His two brothers taught successfully and his family was accounted one of the best in the community. His wife's driving propensities were not always comfortable for him. They had started to pay for a farm, when he was drafted into the Union Army and later died at Andersonville prison. His wife afterwards succeeded in paying for the farm by dint of her own efforts. Their two children are IV–75, born about 1860, and IV–77, born about 1862.

IV–75 was decidedly above the average in school-work, active, and ambitious. Married IV–76, whose family was quick mentally. Her sisters are decent, but her brothers, though shrewd, are alcoholic and sexually loose. They lived for a time on his mother's farm, but later moved to Iowa and then to Alberta, where they have a farm of 330 acres. Their ten living children are said to be above the average in ability. The eldest (V–145), born 1889, died 1911; an apt scholar who had taught successfully for several years. The second child (V–146), born 1891, graduated from normal school; also taught successfully. The others attended school regularly and are making excellent progress.

IV–77 was brought up for the most part by her father's people. Was fairly quick and intelligent; given school advantages and taught for years. Married IV–78, the son of a rather eccentric man. They are in fair circumstances, owning 18 acres and a good farmhouse. They have two daughters; the elder (V–158), now 26, was married under the eugenic law of Ohio and has a bright, healthy baby. The second daughter (V–160) is an intelligent, persevering girl of 13; rather shy; helpful at home; attending high school.

The second marriage of III–26 was to a man belonging to a good family, but who was slightly alcoholic, and proved himself to be

unacceptable in his working habits and general conduct. She divorced him after the birth of a son (IV–79), who is said to be shrewd and ambitious; went West and married in Nebraska, and now is reported from Montana, where he is prospering on a ranch. Two of his children are dead; nothing learned about the remaining six.

The fourth child (III–28) of Stephen Rufer was born 1838, died 1907 of tuberculosis. In school ability stood midway between his two sisters and his two brothers, but physically was the weakest of his fraternity; never well or strong, and of an irritable, ugly disposition, finally going all to pieces nervously. Married III–29, whose two brothers were epileptics but otherwise able. She is characterized as a bad women of malicious, designing disposition, who led her husband into all sorts of futile enterprises. She became deranged before her death and finally died at the county farm.

III–28 always showed poor judgment in the conduct of his affairs. Because of his disabilities he was given the life lease of the homestead. He despoiled the timber, was forced by his wife and her people to invest in a hotel, and, failing in this venture, encumbered the property, so that what he eventually left was little more than enough to bury him. Their only child (IV–81), born 1881, was a low-grade imbecile, never able to talk properly or attend to her personal wants. Was cared for at home until the removal of her mother to the county farm, when she was admitted to this Institution for the Care of the Feeble-Minded of Western Pennsylvania and died 3 months later of measles.

Stephen Rufer's youngest son (III–30), born 1845, was brought up on his father's farm and given a common-school education. Is temperate, energetic, persistent, fairly intelligent. Has had a checkered married life with III–31, who was born near C. She is a vicious woman with a very violent temper, who used to belabor her husband with bed-slat and axe-handle until he was nearly dead, so that he left her six or seven times. She eventually got to running after a neighbor. Her husband divorced her and when the neighbor's wife died from abuse she married him. She is shunned by her family and acquaintances. Is living now in a neighboring town and seems to have plenty of money, but no one knows where she gets it. In spite of the lack of his wife's cooperation, III–30 has managed to acquire a farm of 80 acres, well cultivated; machinery and buildings in excellent condition. His children are:

IV–82, born about 1875. Assertive, ambitious, with her mother's violent temper. Living on a farm about 3 miles from F. Dominates her husband, indoors and out. No children.

IV–84, born about 1878. Temperate, hardworking, of fair mentality and intelligence; easily excited, and when aroused is very abusive.

Attended college for a time and then taught school. Has married IV–85 and lives in a house of his father, whom he helps in addition to working his own small farm. No children.

IV–86, born 1881. Not very strong physically, but with equable temper and fair intelligence, discussing with interest general questions of the day. Has married IV–87, who is a barber, and belongs to a family of good mentality, and who are well connected. He is jovial, strong, and of good mentality. They have a comfortable home furnished in fair taste and ride in their own automobile. Their daughter and only child (V–169), born 1905, is a pretty girl, a little nervous, but bright and attractive and being very carefully reared.

Summary of Line C.

In surveying Line C, one is struck by the complete absence in later generations of anything that can be denominated social inadequacy. The sole instance of marked mental defect arises in the third generation from the union of the weakest member of the fraternity, irritable and lacking business sense, with a woman having little judgment who later became deranged and who belonged to a strain showing epilepsy. Their imbecile child died young. All of the remaining marriages may be characterized as eugenic, with the possible exception of IV–54 with IV–55. Here a degree of unpracticality on both sides, coupled with a relative lack of perseverance, put the burden of support of their children for a time on others; but all have become self-supporting.

This line is remarkable, too, for the complete absence of the number and proportion defect characteristic of the mother of its founder. The founder of the line had the sense of number and proportion, with some calculating ability. Marriage with ability resulted in a slight advance for two of his progeny and considerable advance for the remaining three. Marriage of the two inferior ones with ability belonging to able strains has again been followed by advance with reference to these traits, so that in the last two generations all children possess average ability or ability decidedly above the average. In this regard this line may be said to have realized the half-playful suggestion of an eugenicist of a century ago, that with proper selection (selective matings) a defect may be blotted out of a family, just as a careful gardener blots out the blemish from a flower. Aggressiveness was high in only one of the founders of this line. It appeared in moderate degree in at least three of five children, and in high degree in two. Later generations have shown a splitting-up into medium and high aggressiveness, which, with fairly constant occurrence of perseverance and good mentality, has raised all branches of this line to a condition insuring social efficiency somewhat above that of Line B and the better branches of Line A, and in striking contrast to the social inadequacy of the defective and degenerate Lines D and E.

VII. LINE D.

Line D was founded by Darius II–11, fourth son of Aaron and Mary Rufer. He was born about 1798, shortly after his parents came to America. Died September 1884. He was a slow, stupid, plodding sort of man, but fairly thorough in his farm work. Could neither read nor write, but was said to have been able to perform simple additions and multiplication. His wife (II–12), who came from "down Pittsburgh way," was a masculine woman who usually wore short skirts and a man's shirt and boots. Her sister was "the very devil of a woman," who had married Isaac Rufer, and she belonged therefore to a strain showing alcoholism, bad temper, and lack of sex control. She herself is said to have been fond of strong drink. She was, however, strong, energetic, assertive, and a most excellent housekeeper. She kept the log house and its yard neat as a pin, and in the pursuit of her ideals she was a figure of terror to troublesome children in the neighborhood. In domestic altercations she often got the better of her husband, whereupon he was wont to reflect to his neighbors, "I wish't I hadn't a tuk her." Kept the 70 acres they inherited from Aaron intact, and bequeathed the greater portion of it to their only son.

Their children were very diverse in capacity. The eldest daughter (III–32) was lacking in sense of number and in practical judgment and aggressiveness, but was fairly persevering. The second child, only son (III–36) was inferior to his elder sister in all these traits. The second daughter (III–38) possessed sense of number and proportion, had fair practical ability, but was very illiterate, since she never went to school. The third daughter (III–40), said to be of low mentality, was unable to count and measure properly, and incapable in practical matters. The fourth daughter (III–43) showed mentality superior to the rest of her fraternity. She was aggressive and fairly persevering, but selfish and grasping. Following the history of each of these, we find considerable diversity in the type of matings made and resulting diversity in the trend of succeeding generations.

The eldest (III–32), a daughter, born about 1827, has always been regarded as very feeble-minded, lacking a sense of number and proportion and silly in her mode of talking. She devoted herself to the comfort of her father, but cherished the hope of marriage for many years. On one occasion when her father was extolling her virtues to the neighbors, saying, "I don't know how I would get along without her," she retorted, "Ah, but you won't have me always, Pa." She was at this time little short of 60 years of age. At present she lives with her sister's son, who has put up a house near the old log house of her father and in the middle of the small patch of ground left her. She is a shriveled, little old woman, fairly neat in person, sight and hearing still good, but does very crudely the work necessary to their

primitive manner of life. Their kitchen is bare and dirty, chickens running in and out of the open door, living-room crowded with farm machinery and broken furniture. Interest extends to her few immediate relatives. The information she can give is restricted to: "Billy," (her nephew,) "he is gone away off"; "I'm the only girl that's left"; "I don't know how old I am, but I was born in buckwheat time."

The second (III–36), born 1829, the only son, who inherited nearly 70 acres of good farming land from his father. He, too, was without sense of number and proportion, and although he went to school for several years, was never able to learn anything. He was too feeble-minded to plan his work carefully or successfully and too careless and slack to do well what was planned for him. The land which he did not sell fell into disuse, and his neighbors, out of pity, used to hire him to do simple tasks for them, but he could not be relied upon to use even the hoe properly. In his old age he went to the county home to die.

In 1854, III–36 married III–35, born about 1830. Her immediate family were of fairly good repute, thrifty, poor, hardworking, and non-aggressive, but belonging to a strain showing lack of sex control. She never wanted to learn anything at school and was very wild and immoral as a girl, the common property of the dissolute young men of the neighborhood. She had one illegitimate child and was about to have another when her father persuaded simple-minded III–36 to marry her and provide against further trouble of the sort. She has preserved her reputation for licentiousness throughout her married life, and has had at least one child who is said to be "not a Rufer" during this time. While her brother and seven sisters found decent, fairly respectable partners and founded families of self-respecting citizens, and in most cases have bettered their conditions, she speedily sank below the condition of her husband's people, taking no interest in her housekeeping or in the bringing up of her large family of children. The house was never clean, nor was the food well cooked; everything going without plan or purpose while the mother raced the countryside five days out of every week, getting entertainment for herself and her children from anyone on whom she could impose. She is still living with one of her sons in a dilapidated log house reached by a path through neglected fields. In spite of her great age she continues to be active and vigorous, but is too nearly blind to do any work; accordingly the filth and confusion of the place are unspeakable. The low walls are black with smoke, the dirt could be taken off with a hoe, and it is impossible to tell the original color of covers and cushions, so faded and soiled are they. Her mind is still fairly clear and memory good; she is cheerful, and has a kindly spirit toward the whole world. She spends her time smoking by the stove or on a rickety porch, or visiting the few old cronies in the village.

The children of this couple are: IV–93, born 1856, died about 1905 of syphilis. She was a slow, stupid, incapable, licentious girl, lacking sense of number and quantity. Had a most rudimentary skill in housekeeping. Her first child was supposedly illegitimate. She married IV–94, who had strayed into the community. He was thought to be a decent man, but weak, ambitionless, and of a large imagination and a great conceit. He worked round by the day, but was often idle when work was plentiful. It is thought that his wife helped out the family income by immoral means. She was ill for a long time, her body was covered with sores, and was so foul with syphilis that after her death it was impossible to prepare it properly for burial. IV–94 is now a thin, stooping man with quavering voice, trembling hands, and uncertain gait. Can read and write and discuss with some intelligence general questions of the day. His favorite theme is his heroism in the Civil War, in which he says he was enlisted at 13, and saw service from Gettysburg to Petersburg, engaging manfully in 36 battles. He was seriously wounded in the right arm at Petersburg. Few credit these stories, and he has never been able to establish his claim to a pension. During his early life he is said to have led an adventurous existence with his uncle, the commander of a revenue-cutter, having had to leave home because of the abuse of his father. The latter was not alcoholic, "but just plain ugly." He had no brothers and all his sisters died in infancy.

The first child (V–190) of IV—93 and IV—94 was born about 1880, died 1909. She was thought by some to be illegitimate. Was taken as a child into a good family, and grew to be a fine, capable, intelligent woman. Married V–189, and at the time of the birth of her first child was taken with "paralysis of the heart," which eventually caused her death.

The second child (V–192), born 1882, spent much of her girlhood at the home of the grandson of Isaac Rufer, whose benevolence has been noted earlier. She was never able to progress at school. She had a daughter, and afterwards married the man who was, presumably, the father of her child. He and the child, which was kept by the Rufers, both died and V–192 afterwards married V–193. He is shiftless, good-for-nothing, densely ignorant. His mother is a very illiterate, slipshod, and immoral woman who ran away from her husband and lived with another man. His father had a rudimentary education, was a blacksmith and stone-mason. He died several years ago from the effects of a paralytic stroke. His feeble-minded brother has recently married a middle-grade imbecile suffering from secondary syphilis, who was for a short time at the Institution for the Care of the Feeble-Minded of Western Pennsylvania. She belongs to a very bad family, and was run out of town because of her immoral relations with a negro and a Chinaman. It was at this juncture that her husband "rescued her"

and made her his wife. V–192 and 193 own nothing but an old horse and buggy. They move from one farm to another and have now gone to stay with his mother. Since his illness in the spring from diabetes mellitus they have received county aid, and are liable soon to become public charges, since the mother is unwilling to work. She will not do even her own work, as the unspeakable fifth and disorder of their home testify, much less help her family.

Five children have been born to them. The eldest (VI–129), a boy of 10, learns with fair ease, but attends school very irregularly. The second (VI–130) is very inattentive and lazy; at 8 barely reads or counts to 100. Both of these boys have been caught pilfering. The third (VI–131) has bad articulation at 5, appears silly and mischievous. The fourth (VI–132) died at 2 months of pneumonia and whooping cough. The fifth (VI–133), nearly 3 years of age, is just beginning to walk and does not talk at all.

V–194 and 196, two sons of IV–93 and 94, born about 1886 and 1889, are described as slack, thriftless, devil-may-care fellows. They made little progress at school; now drink and carouse and drift about and keep at no regular work. They are also shifty and mixed in their marriage relations. V–194 "stole away" another man's wife and after living with her for a number of years married her. They are living in A, where he has been employed on the railroad for several years. V–196 has reported himself married to several young women, among them a show-girl. He lives with none of them. Is at present reported from the southern part of the State, where he is a flagman on the railroad. No children.

The youngest daughter (V–198) of IV–93 and 94, known as "delicious Maud," was a rather pretty girl, but silly and ignorant and given to gadding about. Married V–199, of degenerate stock. Capable when he cares to work, but commonly thought to be licentious and a thief. This woman neglected her home and children, and ran after Italians and "Hunkeys" who are on the railroad. It is reported that her husband sold her to one of them and then on evidence of her unfaithfulness put her out of doors. He is at present digging trenches. He lives with his imbecile brother, formerly an inmate at the Institution for the Care of Feeble-Minded, Polk, Pennsylvania, and his two little sons in a shack in the woods. The wife has taken their youngest child (VI–136) and gone to live with another man who belongs to a very bad strain. The two little sons, aged 7 and 5 respectively, are small for their years, quiet and shy, but otherwise appear to be average children.

Returning to the second child of III–35 and 36, we have IV–95, born 1857. She was utterly unable to profit by school training, but was always a modest, pleasant-mannered girl. Married about 33 years ago IV–96 who comes from a good family and is superior to her in

mental ability. They have lived on various rented farms, and for the past 15 years have worked a small place near C. At first glance it is inexplicable why they are not more prosperous, for both are honest, hardworking, and sober. They have no children. It appears, though, that there is some mismanagement on the part of the husband and a too-great willingness to oblige his neighbors, leading to neglect of his own interests. His wife's defects are also a serious factor in the case. She is a very short, corpulent woman, small head, rather good features, neat in her person, and civil in her manner, gets about with great difficulty, but manages nevertheless to keep house in a fashion. She is extremely defective in her sense of number, quantity, and proportion; can tell the time of the day, the day of the week, and count in a mechanical fashion up to 20, but can not handle even small numbers or quantities intelligently. She knows, for example, that you save a "good piece" by taking a certain road, but can not tell whether that "piece" is more nearly 1 mile or 3. She remembers that she was married on a Wednesday, but can not tell the month or year, or whether it was 15, 20, or 30 years ago. She herself is "pretty old," but not so old as her mother, who may be 35 (in reality 84). In trading in the village store she was pleased with some bulk coffee which had been put up in different colored sacks; her sack chancing to be red, she has henceforth demanded that color, regardless of the quality of the coffee it may contain. Her house is poorly furnished and not very clean; walls discolored, rag carpet faded and dirty, rusty box-stove in one corner, pictures awry. Cottage organ and dresser crowded with a queer assortment of ornaments, suggestive of a child's playhouse. There was a huge china dog wearing her husband's collar, a broken lamp-stand, a mirror flanked by a pepper box, a shaving mug, an ancient Christmas bell, and a patent-medicine bottle containing a bouquet of soiled paper flowers. She can not make her own clothing. Her favorite occupation is sewing patch-work for quilts, of which she is said to have dozens; the pattern is always small squares, which, however, are more apt to be oblong; these are sewed with clumsy stitches into long strips; if they prove too long when laid on the bed, she chops them off, and finally, by the trial-and-error method, she is able to sew all together into the proper rectangular shape. With all these defects, she still had sufficient sense of the fitness of things to resent the too cordial interest in her private concerns. She is, moreover, a kindly, obliging person, childishly stubborn and unreasonable at times, but, in the main, a good neighbor and friend. Two children of this couple, a boy and a girl, involving extremely difficult labor, were born dead.

The third child (IV–97) of III–35 and 36 was born 1859. He is a very short round-bellied man, with brawny arms, and a fat, childish face, china-blue eyes, toothless mouth, and a chin nearly always

stained with tobacco-juice; very hardworking and on the whole good-natured and easily moved to mirth. He stays with his sister most of the time, and works for neighboring farmers whom he occasionally leaves in the lurch for childish unimportant reasons. Since he lacks all sense of number and quantity, he can not be relied upon for many kinds of work; can not tell 2 from 4, or a quart from a peck; knows he earns a dollar a day, but has no idea how much he ought to earn in a week or a month. People often cheat him, but if they do, he "just lets it go." He has never married, but says he may do so yet. So far as known he has not been guilty of sexual immorality. His conversation is usually limited to, "yes, mam," "you bet." His ideal of happiness is realized when he has a pair of overalls, a straw hat, and a quid of tobacco.

The fourth child (IV–98) of this fraternity, born 1861, died about 1900; was the only one of this family capable of learning to read and write, and thought to be illegitimate. She lived much of the time with the family of a prosperous farmer, and from there married IV–99 and went to live in Ohio. She had one child which did not live, and afterwards cared for the only surviving child of her sister until her death.

The fifth child (IV–100) of III–35 and 36 was born 1863, died 1897, septic infection following labor. Nothing is asserted against her morals. She was a large, heavy, inert girl with very coarse features. She had a rather sweet voice, but was regarded by her associates as simple-minded. Was never able to read or write, or keep house properly, and showed the same number and quantity defects as her sister and brother.

She married IV–101, a feeble-minded man who had been epileptic in his youth. The marriage of these two was arranged as a practical joke by a friend of IV–101, who, knowing of his desire to be married, coaxed him away on a visit to the home of IV–100, and in three days they were secretly married. He was the son of a decent mother and a wandering, alcoholic father, whom whisky threw into violent convulsions, and who came from a strain showing much vagrancy, alcoholism, epilepsy, low stature, and mental backwardness. This family led a migratory existence, while the father made a slender livelihood at coal-mining and charcoal-burning. The children numbered fourteen, of whom ten lived to grow up. Of this number, only one, the eldest, is known to be a woman of sterling quality; a devoted mother, and active in temperance and church work during the half-century of her married life. Her sisters have been somewhat changeful in their marriage relations, moving about a great deal, assuming little responsibility for their families. Her four brothers have marked vagrant tendencies and are irresponsible in their work and family relations. Two

are decidedly alcoholic. They have so little interest in one another that they often remain lost to other members of their family for years together.

IV–101 is said to be one of the worst of this fraternity. He was very excitable as a child and indulged by the rest of the family. He was incapable of making progress in school, and was fond of letting his imagination take him on wonderful adventures. At 25 he was "cured" of his epilepsy by a quack doctor. He and his wife lived in squalor in several towns, where he had fitful employment in the foundries. When he had work they lived extravagantly for two or three days following pay-day, starving the rest of the time.

Of their children, the first (V–203) was still-born, the second and fourth (V–204, 206) were boys and died when a few days old, the third (V–205) is a low-grade imbecile and a patient at the Institution for the Care of the Feeble-Minded at Polk, Pennsylvania. Both parents were very fond of their children and very sad when they died, but were so little observant of their needs that on one occasion, a relative states, they actually cuddled one of them and held it to the fire to warm it a long time after it was dead.

After his wife's death IV–101 left his daughter to the care of relatives and resumed his vagrant existence, spending part of his time at the county farm, and part with any relatives who would keep him. At present he is staying on a farm where he gets his board and 50 cents a day, though his employers say he does not earn it, since he knows and can learn nothing about handling a horse, and can do only such rough work as loading stone and digging trenches. He is a stooping, undersized man, with head set well down between his shoulders, shuffling gait, hands showing tremor and face continually twitching. Can not read or write, and, although he knows the denominations of money, shows no judgment in making the simplest of purchases. He is a great glutton, but is not at present intemperate in drink, though he has been so in the past. Is very good-natured and entirely trustworthy, so far as money and his work are concerned, but he lies magnificently about his own affairs, showing, however, some discretion in his choice of person to whom he tells these tales. He told his employer's wife that he had bought his daughter a gold watch for a Christmas present, but when the story was repeated to the field-worker, the gold watch had become a pair of red slippers. Most of his accounts, however, have to do with his agility and his physical prowess. He is fond of telling how he whipped John L. Sullivan in 1882; how he once grabbed a roll of butter off a red-hot stove and knocked a man down with it. Another adventure he relates is that once he and another man drove a hand-car 5 miles from their camp in order to carry a beef. Before they could do so they were attacked by a wild cat; they fled to camp, making the 5 miles in 10 minutes, the wild cat following them all the way, and when

they reached the camp it was shot by their friends. While it is true that he has great endurance, it is also probably true that he has not sense enough to be afraid of anything.

The sole surviving child (V–205) of this couple, product of two germplasms lacking practically all socially effective traits, was born 1894. She is a low-grade imbecile patient at the Institution for the Care of the Feeble-Minded, Polk, Pennsylvania. She was taken by her aunt (IV–98) and after her death was bound out by her uncle to some people, who, according to the story of her father, neglected and half starved her. When about 12 years old she was brought back to S by her aunt, and kept for short periods by various relatives on her father's side. She spent most of the time with her paternal aunt, who is in fair circumstances, but who found the child too great a care. She could not dress herself or eat properly, and was on the lap of every stranger who entered the house. She had also slight epileptic attacks. This aunt was instrumental in having her taken to the county farm, whence she was later transferred, November 1904, to the Institution. She is good-natured, active, well-nourished, inclined to gluttony; sight and hearing good and without noticeable speech defect. She has never learned to read or to count to more than 5; does only the coarsest work, such as scrubbing and paring potatoes; is very talkative and light-hearted, and gives a stranger the impression of being of better mentality than she is. Her conversation is confined to immediate objects, since she remembers scarcely anything of her life prior to going to the Polk school. She has had no epileptic attacks during the last five years.

Returning now to the sixth child of III–35 and 36, we take up IV–102, born 1866, familiarly known as "Doc." He has no marked defect in sense of number or quantity, but was too lazy to learn anything at school; has grown to be a fat, stupid, sluggish man; round face, and rather coarse features. Has never married. He lives with his mother in the dirty, disordered log house already described. They have sold off portions of the 70 acres bit by bit, until only 20 acres are left, and these are uncultivated. He occasionally puts in a crop, and then is too lazy to work it. When too sharply pressed by want he goes to his neighbors and gets them to advance a dollar on work promised; then he fails to do the work. During the past winter he and his mother had been recipients of county aid. He is said to have immoral relations with his cousin's wife, and has also taken various women of bad repute to live with him. When threatened by the community with being tarred and feathered for this offense, he turns the woman out. He is very easily moved to laughter and will sit for hours smoking and chuckling over some supposed joke. He is thus lazy, stupid, dishonest, untruthful, with the libidinous instinct of his mother.

The youngest son (IV–104) of III–35 and 36 was born 1869; thought by some to be "not a Rufer." His resemblance to other members of his fraternity would indicate this idea to be erroneous. His mentality may be inferred from the following characterization: He is too smart to be a Rufer, yet not smart enough to be anything else; has been able to learn to read and write a little and possesses judgment enough to take care of stock. Owned a small piece of land, but has never had sufficient calculation or perseverance to make anything out of it or to get on at any other kind of work. He is, however, courteous, pleasant-spoken, obliging, with an alert, interested manner which goes far to obscure his defects. He is also easily moved to mirth. Has been married three times.

His first marriage was to IV–103, who was his second cousin once removed, being the daughter of IV–21 of Line A of this history. She is said to have been fairly capable and intelligent. She died of tuberculosis at 42. Their elder daughter (V–207) lived to be 14 years of age and died of tuberculosis. She was sent to school, where she made fair progress. The younger daughter (V–208) survived her mother only a few months, dying (1898) of "cholera infantum."

The second marriage of IV–104 was to IV–105, sister of a man who has been in an institution for the feeble-minded, and of V–199, who has criminalistic tendencies. She had, before she married, two illegitimate children (twins) to a farmer for whom she worked, but there were no children from her union with IV–104.

Since her death and within the last year IV–104 has married IV–106, whom he met while staying at the farm of his sister. His present wife has respectable brothers and sisters, but she had two, and possibly three, illegitimate children while living as a domestic. At least one child was born in the Salvation Army barracks. Her marriage to IV–104 was also a forced one. Their son (V–208′), 5 months old, shows Rufer features and good nature.

Mrs. Rufer is a pretty, soft-mannered woman, not yet 21, who is content to drift along with little effort for the care of her children and home. Lives in a shabby little house on the edge of C, where her husband earns a scant living working for his brother-in-law and other farmers. The appointments of the place show many incongruities; house swarming with flies; walls blotched where paper is torn off in great patches; scanty furniture in disorder, but the table had a clean white cloth and centerpiece of flowers. Her children were as clean as any need be, but their mother apologized profusely for their appearance.

The illegitimate children of III–35 and their descendants exhibit some traits not possessed by her children to III–36 and their descendants. They also show some defects not characteristic of Line D. Con-

sidering them briefly, we have IV–90, born about 1851. She was fathered by a chance visitor in K. She was of fair mentality, with ability to calculate, though she went to school but little, and since she never lived at home, but was cared for by her paternal grandmother and various families in and about K, she learned to be a fair housekeeper and seamstress. She married IV–91, a drunken good-for-nothing, whom she deserted. He had, however, ability to calculate and came from a family possessing this ability.

Their four children are: V–182, who had moderate school advantages; was able at figures, and now is boss of a work train. He has married a fairly intelligent woman of good family. Their eldest son (VI–120) shows good mentality at 20; is working with his father. Their elder daughter (VI–121) died at 9 months of cholera infantum. The younger daughter (VI–122) is making good progress in the sixth grade at 10 years.

The second son (V–184), showing less aggressiveness and perseverance than his brother, has fair ability to calculate; owns several acres of land and does carpentry for a living. His wife is of very moderate mental ability. The two older children (VI–123, 124) have made little progress in school, and show little plan and purpose in life. The youngest (VI–126) is still in school; was not studied by author.

The daughter (V–186) was very reckless; while a girl was crazy for men, and had a reputation for sexual immorality; after her marriage to a baker, settled down to help her husband manage his business. No children.

V–188 is the youngest of the children of IV–91; a young man of 30; has never been able to talk plainly "because of large tonsils." Did not attend school or learn even to spell his name. Now lives with his mother, and does odd jobs for a living. There is said to be no defect of number sense here, his ignorance of figures being attributed to his stubborn refusal to attend school.

The other illegitimate child of III–35 was IV–88, born 1854. He is said to be the son of a man who died in the Civil War, and whose family show nervousness and instances of sexual laxness. He lived very little with his mother, having been brought up by a respectable, hard-working family in another county. He is fairly intelligent, but is impatient, irascible, and has been alcoholic. He never learned a trade, though he works with fair steadiness at blacksmithing, sand-grinding, and other kinds of unskilled labor. Has married IV–89, whose family shows some feeble-mindedness. She is a large, motherly woman, capable and of fair intelligence; she shades the truth and is said to be bad-tempered at times. One son (V–179) died in infancy of cholera infantum. The other children, three sons (V–173, 175, 177) and two daughters (V–171, 180), have all married very young. They are all said to be very quarrelsome.

One son is alcoholic, and both daughters have always had a reputation for recklessness and waywardness, the first marriage of the elder daughter having been a forced one. They all live in weather-beaten houses on the bluff overlooking the shops of the town where the boys work. The girls have delicate and rather pretty features, but are listless, slovenly, bad-tempered, unintelligent. The children of all are uncared-for, though they appear bright and active. Homes are indescribably dirty and disordered.

Going back once more, we now take up the third child of II–11 and 12. III–38 was born about 1830, died 1893. She is remembered as a woman of calculating and practical ability, though illiterate, since she never went to school. Had an illegitimate child (IV–34), whose father was a man of very bad reputation for sexual immorality. IV–34 married, and died soon afterwards. Her only daughter's present whereabouts are unknown. III–38 married Jared Rufer (III–9), whose father was Aaron's eldest son, Isaac, and whose mother was a sister to the mother of III–38. III–38 and her husband were thus double cousins. He was slow and unambitious and had only a most rudimentary idea of number. Owned a few acres of land and a poor house, and worked very hard at anything he could find to do for a living.

Their children were: IV–27, born 1862. Very little calculating ability and capable of only slight advance at school; now a slow, quiet, reticent man of good repute who looks as though he might have tuberculosis. Had married IV–28, who died at 32 of neuralgia of the heart. Living at present in G, where he works on the section. No surviving children.

IV–29, whose general mentality and calculating ability was above that of IV–27. Died of tuberculosis, leaving no children.

IV–31 was born about 1868. Slow and stupid; midway in calculating ability between his two brothers; has shown little ambition, but works with fair steadiness at odd jobs. He has a tendency to petty thievery, surreptitiously gathering up eggs in places where he is employed, and occasionally takes a chicken. He has consorted at various times with immoral women, and has lately married, under the eugenic law of the State, a very obscene, boisterous, sexually immoral girl, barely 18. She comes of very bad stock and was epileptic from her second to her thirteenth year. Has attended school very little; can do housework in a crude fashion, but prefers to run after the "Hunkeys" who work on the railroad nearby. She is, clearly, a subject for permanent custodial care.

The third son (IV–32), born about 1871, ran away from home when a boy of 12, going West, where he has won success. Returned to his boyhood home for a time, but resented the stigma on the Rufer name, saying here he was "only a damned Rufer"—he would go back West

where he was "as good as anybody." Described as a fine-looking portly man, intelligent and public-spirited, owns two ranches in Idaho, where he is a school director. Has married there and has one son (V–68), reported above the average in quickness and intelligence.

Going back once more, we take up III–40, the fourth child of II–11 and 12, born about 1832, died 1902, inflammation of the bowels. She was of poorer mentality than the eldest sister; never able to count or measure anything properly, or to learn anything at school. Had an illegitimate daughter (IV–107) before marriage, who was characterized as being "ten times as smart as her mother." No further particulars obtainable. When III–42, a middle-aged widower of good family and mentality, wanted a housekeeper, he was persuaded to marry III–40, but is said to have had ample reason for regretting his choice. He was intelligent, well-balanced, reticent; a fairly prosperous farmer. Her children (IV–109 to 112) to him all "took on the father's side," being, likewise, intelligent and well-balanced. III–40 afterwards married a thriftless, alcoholic, ne'er-do-well who strayed into the community. They had no children.

III–43, the youngest child of II–11 and 12, was born in 1834, died 1908, gastric fever. She was of better mentality than the rest of her fraternity, but selfish and unprincipled. Is remembered as a woman of scurrilous tongue, always scheming to get the better of her simpler sisters. She married III–44, who belonged to a family numbering eighteen. Their father was an Irish weaver, who had immigrated here with his wife and several small children. He died in middle age from paralytic stroke, and his fifteen surviving children became widely separated, many of them going West. III–44 was active and ambitious, with a good deal of native wit. His most serious offense against the community was sheep-stealing, for which he served a term. Worked a small piece of land which they had inherited from his wife's father, and made the balance of the family income by helping his neighbors, and occasionally helping himself to things which did not belong to him. He died at 47, after having been afflicted for 5 years with creeping paralysis which began with a sunstroke and finally made him blind and helpless. The children of this couple are:

IV–114, born 1853. She is illiterate and ignorant in matters of general interest with a poor memory for figures and dates and only small calculating ability, but a fair housekeeper, sensible and civil. Married IV–113, who worked fitfully at masonry and other trades. He is rather slipshod, always behindhand, and sometimes troublesome in the community on account of his drinking and thieving. At present bedridden with paralysis. His parents came from New England and belonged to a strain showing marked mental defect. IV–113 and 114

had fifteen children, three of whom died in infancy. Those who lived were not sent to school regularly, and when they came were so filthy that teacher and pupils used to resort to "playing house," in order to have a chance of scrubbing them up. All were made to shift for themselves at an early age. Their characteristics are:

V–210, born about 1877. Generally sat in school with his tongue out. Got the barest rudiments of learning. Drinks now, and earns his living working on the railroad. Has married and has two children (VI–137, 138), of whom nothing was learned.

V–212, born 1879. Said to be the best of this fraternity. Is sober and works with fair steadiness on the railroad, where he is at present foreman of the section. Has married V–213, the illegitimate daughter of IV–24, Line A, and IV–4, Chart B. Detailed description of children will follow later.

V–214, born 1881, the ignorant, irresponsible member of Line D who married V–1, Line A, this history. Characterization on page 18.

V–216, born 1882. Quick at school work "considering who she was." Sexually moral. Married V–217, who works fitfully on the railroad and at gardening. She is a very decent, pleasant-spoken, obliging woman, but a very careless housekeeper. Of their two children, the eldest (VI–146) is very slow and dull, but good-natured and persevering. The younger, fairly quick; up with her grade at school.

The next younger daughter (V–218) was born 1883. Well-behaved and able to progress at school. Now a trim, comfortable matron with much good sense. Her husband (V–219) comes from an honest, industrious strain; works in a chair factory and keeps his family in comfort. Three of their children (VI–147 to 149) are dead. Those remaining are neat and well brought up, but are greatly retarded at school. They are: VI–150; a good boy, well behaved, but inattentive unless held strictly to his task by the teacher. Very little idea of number or proportion. At 10 has just managed to "scrape" into the second grade. VI–151[1] is also well behaved; very small for her age, has number sense, and is, in general, brighter than her brother. Has managed to make second grade at 8 years. Another girl (VI–152)[1] appears very nearly of normal mentality.

Reverting to the children of IV–113 and 114, we have V–220 and V–221. The former was accidentally killed at 8 years; the latter, born about 1884, is a dissolute alcoholic man, but fairly capable at rough work. His wife (V–222), a distant cousin, had a very bad reputation for sexual immorality in her early girlhood, and comes from a shiftless, stupid family, who, however, are said to be honest. She had married V–223 at 19, to whom she had seven children (VI–154 to 160), continuing her excesses all through her married life. Her husband finally put her away, taking all of the children but two from her. One of these (VI–155), the second of the family, a girl of 15, lives with her mother

[1]Not shown in plate.

and V–221. She recently had a child which the mother wished to make way with. The attending physician interfered, threatening her with the law should she do so. Nothing has been seen of this child for several weeks, but the case has not yet been investigated.

Two children (VI–151, 152) from the union of V–221 and 222 are both small for their ages, backward in walking and talking, but apparently healthy.

The next son (V–224) in this fraternity was born 1886. Is alcoholic, but works with fair ability and steadiness at odd jobs. The family into which he married are noteworthy for their drinking and worthlessness. They had ten children, four of whom died in infancy, while the four youngest were taken by a charitable society because of the gross neglect of their parents. The father was drowned, while intoxicated, some years ago, and the mother, also very alcoholic, now shares the poor apartments of V–224 and his wife. V–225, the wife of V–224, is slow, listless, silly; a very poor housekeeper, under constant treatment for ailments which appear to be largely imaginary.

The next daughter (V–227) in this fraternity is sexually immoral and alcoholic, and was divorced from her first husband because of her manner of life. Her second husband, who is as bad as she, does not live with her at present. She is very neurotic and quarrelsome. Is often sheltered for brief periods with her brother and sisters, and then drifts away to take up with anyone who will support her, or to be "employed" in various low-class hotels. Has never had any children.

The next younger members in this fraternity are a pair of twins, of whom V–231 died at 18 months of cholera infantum. V–229, born 1889, is one of the most capable members of the family. Has always been a modest, well-behaved girl, and graduated from country school at the age of 15. While on a visit to her sister she met V–230, who had been a waif and adopted by very decent people owning considerable property. He had high-school and business training, and now runs a launch for a large meat firm. The home of this couple is in a very good section of the city, well furnished and managed. The wife had a nervous collapse after the birth of her first child. Is continually taking medicine and now has spells when she can "fly all to pieces at nothing." Otherwise is civil, obliging, fairly intelligent, and keeps aloof from her less fortunate brothers and sisters. Two children, born 1909 and 1912, are bright and full of mischief.

The next younger sister, V–233, born about 1892, cohabited with a man who had a wife living. He was abusive, alcoholic, with no definite occupation, but is said to have provided fairly well for V–233. She died a year ago, after the birth of her fourth child. The two younger children were taken for a time by strangers, but now all are said to be living together and cared for by their paternal grandmother.

The next daughter, V–235, born about 1893, was always very dull and backward at school. Has married V–234, who is a brother of

V–225. He is ignorant, alcoholic, shiftless, and fails utterly to provide for his wife and child.

The youngest member of this fraternity, V–236, is quite decent, single and living at home; works with fair steadiness, and is the mainstay of his parents in their old age.

Returning once more to the third generation, we take up the remaining children of III–43 and 44. IV–115 was born in 1855. A faithful, plodding man, civil and obliging, with very little education; has been employed for 24 years by the railroad company on the section and in the freight yard; at present is the baggage-man with the same company, earning $65 a month. Is slightly alcoholic. Married IV–116, 10 years ago. She is ignorant, morose, alcoholic, and a slattern. However, she is kept in fair order by her husband. Their house presents the extreme of dilapidation; no paint, doors sagging, window-panes out, lace curtains ragged and dusty, extremely disordered within. The only child (V–237) of this couple died at 6 months, the result, they say, of overfeeding.

IV–117, born about 1853. Married IV–118, the only brother of IV–113 who lived to grow up; two others died at one year of cholera infantum. The only child of this couple died at one year of the same complaint, and the mother's death from pulmonary tuberculosis followed soon afterwards.

IV–119 made excellent progress at school. In his early manhood got into a sheep-stealing scrape with his brother-in-law, for which he served a term. Now married and reported to be working steadily in a tannery.

The sister (IV–122), born 1863, made good progress at school. A woman of considerable energy, intelligence, and wit. Married IV–121 at 20. He comes from rather rough, alcoholic stock, of which he, in his generation, is the most degenerate member. His father is reported skillful and honest in the main, but unreliable in his promises to work. Two brothers are said to be strictly honest and truthful, policemen in a neighboring city. The third brother resembles his father, while his two sisters are of good repute. He (121) was abusive and failed to provide for his wife and children. When he was sent to the penitentiary for stealing she made it the ground for separation from him, taking the children with her. After earning her living for 8 years at washing and scrubbing, she married V–5, who belongs to Line A. They are living at present at E, where her children have attended the normal school. They go by their stepfather's name. They are:

V–239, born 1889. He has always been a well-behaved boy, devoted to his mother and fond of school. Took normal training in which he substituted trigonometry and surveying for the languages, which were difficult for him. Was a member of the school band and orchestra,

and was prominent in other school activities. Followed his work at the normal school with the Chautauqua course in physical training. Last year had charge of a boys' club in the Middle West, and in the coming year will have charge of athletics in a Y. M. C. A. Has married V–240, formerly a teacher in the normal school. They have a little girl (VI–167) 4 weeks old.

V–243, born 1893. A very pretty, modest girl, passing for 16 rather than 20. Is taking the normal course, in which she finds the languages and drawing preferable to mathematics. She is helpful at home and decidedly musical.

V–241, 242, twins. Miscarriage through the father's abuse.

Summary of Line D.

In surveying this line, one is struck by the diversity exhibited by its various branches,—a diversity which is comparable to that of Line A, although here the trend is in the main downward. Four of the five diverse children of the founder married into widely differing strains. In the second generation, marriage of the superior member (III–43) into a strain showing similar traits results in the presence of these traits in the following generation. This good effect is, however, again dissipated by marriage of the two following generations into stock which is deficient in these traits. Marriage of the inferior III–40 into strong stock obliterated the characteristic defects for at least the succeeding generation. The later history of these descendants has not been followed. The marriage of III–38 with her double cousin is interesting. Each belonged to a fraternity showing a splitting-up into high, medium, and low grades of the traits in question. Their five children tend to fall into three classes, much as do the fraternities to which their parents belonged. The most degenerate branch arises where, in the second generation, a member lacking calculating ability and showing low aggressiveness and perseverance marries a sex-offender also lacking in the traits just mentioned. Here the original defect in number and proportion persists in a large proportion of the offspring, combined, in some instances, with chastity and industry, in others with shiftlessness and lack of sex control. None of the combinations of these defective germ-plasms are such as to insure the presence of socially effective traits, and we have, as a result, vagrancy, shiftlessness, sex immorality, and petty criminality. In this branch high infant mortality and low fecundity have resulted in rather small numbers in the latest generation, but those who are reproducing are doing so in numbers which constitute a distinct menace and threaten more serious problems to the community and the state in the near future. This is true also of the branch engendered by IV–113 and 114.

VIII. LINE E.

This line was founded by II–14, born 1805, youngest son of Aaron and Mary Rufer. He was recognized by his father as grossly defective, and provided with a guardian who had strict injunctions not to let him marry. He could never learn to count beyond 25 or spell his name properly, or tell a peck from a bushel. He had a comical drawl and was very proud of his accomplishments (?) in singing, which made him a sort of village clown. Because his father had left him a good farm, a marriage was arranged for him in order to provide for II–15, who was the weakest member of her fraternity. She was very simple-minded; a condition brought on, she said, by having a "long fever." One of her children, too, is said to have been illegitimate. Neither she nor her husband knew enough to raise much on the farm, or "to do with" what was earned at the direction of strangers. They lived, however, on short rations, and made shift not to sell any of their land. Their children numbered five, of whom three died unmarried. Those who died were:

III–45 had no ability to figure; was never able to learn anything at school; could, however, perform simple tasks about the house. At 14 was scalded to death through her own carelessness. III–46 was unable to understand figures; went to school but little; stuttered. Was capable in housework. III–52 was suppositively illegitimate. His father was mentally able, and he is said to have been as like him as a "near twin." Was able to progress at school. Industrious; raised fair crops on his little farm, and usually had a fine team of horses. At 30 was kicked to death by a horse. The remaining two children in this fraternity married into the second network, which will now be considered.

IX. LINE F. THE RIEL FAMILY.

About the time Aaron Rufer settled here, three brothers, whom we will call Riel, acquired tracts of land in an adjacent township of the same county. They were of German extraction. All had large families, but while two of them lived to a good and honorable old age and died in the fear of God, leaving to their descendants their large, well-cultivated farms, the family Bible, the Confession of Faith, and many careful injunctions as to the care of their widows, the third slipped away one night for parts unknown and left his wife to run the farm and bring up their twelve children as best she could. She was also of German descent.

She seems to have proved herself fairly equal to her responsibilities, for she is yet remembered as a great, brawny woman, quite 6 feet in height, active and aggressive, whose age almost reached the century mark. She survived most of her children and seems to have become a burden on the slender resources of those who remained in this part of the country, for she lived at times at the county farm and finally died there. She became bedridden at the last from paralysis which affected her left side, but suffered little impairment of her mental powers.

The children of this couple were all noted for their great strength and stature. They had many oddities, and their good nature made it possible to tease them almost beyond limit. This was especially true of the boys, who were thus the butt of most of the jesting which was current at the wood-chopping bees. If once aroused, however, any one of them made short work "of clearing the woods of the whole gang." Two daughters belonging to this family of twelve married into strains already described and will be the only ones considered here. They and their descendants form Lines F and G in Chart B.

Let us take up Line F, with Molly Riel (II–2), who was one of its progenitors. She was born about 1810, died about 1875, of pulmonary tuberculosis. Is described as a large, powerful woman, superior to her husband in energy, will-power, and common sense. All that was attempted in bringing up their large family and raising crops on their scanty acres was accomplished by her; still, inference as to her mental capacity can be drawn from the following story: When the census taker learned she had twenty-one children, he exclaimed, "twenty-one children!—and are they all bright?" to which she nonchalantly responded, "yes, quite bright, considering how many there is of them." She married Matthew Rode (II–1), born about 1800. He died about 1860. He is remembered as a lazy, shiftless man, capable at rough work when he cared to do it, but having no education or sense in conducting his affairs. His father was an ignorant preacher who was guilty of incest with his daughter. The character of his mother is unknown. One sister has been traced and found to be "not so odd" or incapable as Matthew and to have died without children.

The Rode fraternity was derived from the feeble-minded father (II–1) and the tubercular mother (II–2) and numbered 21, of whom 6 did not grow to maturity. Of the latter, 4 died at birth or in early infancy; a fifth, born with a harelip, died young; while a sixth was scalded to death as a small child. They were born and brought up in an old plank house on a few acres of poorly cultivated land owned by the father. Many of the surviving children have been away from this section of the country for so long that it has been difficult to fill out their history. All informants agree, however, that the boys were all feeble-minded and the girls superior to their brothers. They were the butt of the community, the youngsters often going by to stone the house, just to see them all swarm out like bees from a hive. They showed great family affection and were very nervous and excitable, an injury to one being enough to throw the rest into hysterics. As they grew older the boys worked about for the farmers, and since they had no idea of money values they were often cheated out of their wages. It was impossible, though, to trick the girls that way. They were capable and knew how much they had earned and exacted full compensation. All of the girls married, but five of the boys did not marry. The reason for this, given in the terse phrase of one who knew, was, "they never could find anyone who was fool enough to have them." They may be briefly characterized as follows:

III–6, born about 1828. Very deficient and stuttered. Never able to earn more than his "board and keep." Stayed part of the time at the county home and part with his sisters; was partly crippled with rheumatism and finally bedridden. Died 1907 at the county home.

III–7, born about 1830, also lived about on his relatives, though he sometimes did such work as woodchopping when he could get it. Of slightly better mentality than his brother, but as he grew older "went off" of what mind he had. Would sit for hours playing with his shoestring or revolving one hand round the other. Finally died at the county home in 1910.

III–8, born 1835, was born ruptured and was never very strong. Never married and used to say in explanation of that fact, "I never loved anybody but Mam. Lucky for Pap that he saw Mam 'fore I did. If I had set eyes on her first, Pap would sure never have got her." Died about 1908.

III–16, born about 1845. He lolls. Can not count to 5 or spell his name. Does only the simplest errands. Cared for by his nephew.

III–24, born about 1846. The most capable and quick-witted of all these boys. Used to cut wood on a farm, where he always seemed possessed to chop down a crooked, bent old tree, which his employer warned would strike him in falling and kill him. One day he stayed behind the others and felled it. His companions, hearing the crash, rushed to the spot and found him crushed to death just as had been predicted; date about 1865.

We will now take up the marriages of the sisters and the two remaining brothers:

III–1, born about 1833. Mentally deficient and stuttered, but fairly steady and capable in his work, trying hard to make an honest living and maintain his independence. His wife is good-for-nothing, said to be the only representative of her family in this part of the country. She ran away with her son-in-law, leaving to the father the care of their six children, the youngest an infant. The family scattered and lived part of the time in the county home; III-1, too, was there. At various times he would slip away to stay with his sister or one of his daughters, or persuade one of them to keep house for him. He was finally, in 1906, taken to the home of his son-in-law and remained there until his death in 1911. His children were:

IV–2, born 1860. Few particulars obtainable. Left home very young, married and lived away from the rest of her family, for the most part in C. Now reported dead and nothing is known of her children.

The second (IV–4), born 1862, was the daughter whose husband eloped with her mother. His family have a bad history of sex immorality and shiftlessness. She (IV–4) had a daughter (V–2) by him, and later a second illegitimate daughter (V–3) whom she "swore on" IV–24, Line A, Chart A. Spent some time with both children at the county home. Later the children were put out from here, the young one going to her father, the elder adopted by a good family in a distant part of the State. IV–4 is now married to IV–94, Chart A, whose first wife was IV–93, Line D. She is a short, round-shouldered woman with rolling gait, squinting eyes, and twitching features; talks in a high nasal drawl a steady stream of irrelevant matter, principally of her housekeeping, which is fair, of her scholarship, and old-time leadership in the district school. She relates with gusto how she once broke up the school because the teacher was too stuck-up to wear a calico dress as she had to do, and so lazy she would not "learn 'm nawthin." When she left the pupils followed, declaring, "if E. can't learn nawthin, nobody can't." Still, she was never able to knit or write, since she always "put wrong stitches and letters in faster than anyone could take them out." Her children are:

V–2, born 1878. As a child lived with her grandfather and at the county home. At 8 was taken from the latter place by a family of some means and refinement. Went to school until she was 16 but never progressed beyond the fourth grade. Was very bad-tempered, and in spite of excellent training refused to learn anything of housekeeping. At 14 ran away from her foster parents; was returned, but continued incorrigible, and a few years later married surreptitiously V–1, who is a section hand, sober, steady, plodding, with very little education; belonging to a family showing fair mentality and industry. Nothing worse can be imagined than the three-room shack in which this couple are bringing up their ten children. Of these, the eldest

(VI–1), a heavy, inert girl of 19, who made little progress at school, has already a reputation for sexual immorality. Two younger girls (VI–2 3), who are modest and well-behaved, showed good ability at school, but left at 14 to take up domestic service. The fourth (VI–4) is deaf and dumb, and being educated at a State school. The fifth (VI–5) was quick at school work. The sixth (VI–6), slow, dull, and inattentive. The remaining four (VI–7 to 10) show, so far, no marked defect, physically and mentally.

V–3, the younger daughter of IV–4, born 1883, was brought up on the farm of her reputed father. A pale, deceitful, bad-tempered slattern whose ill-kept home and neglected, dirty children are the talk of the town. She prides herself, however, on her superiority to her relatives. Has married V–212, Chart A, who belongs to a degenerate branch of Line D. He works on the section and is fairly steady and industrious. Four of the six children of this couple are of school age, but they attend very irregularly and are given no training whatever at home. The eldest was in the first grade when the family left C, five years ago. When they returned there last year the four eldest were in the first and second grades. The characteristics of the children are as follows:

VI–11, stillbirth.

VI–12, born 1902. Had pneumonia at 4 and is subject to ear-ache and sore throat. A rather pettish child, and has been caught pilfering at school. Still in the second grade.

VI–13, born 1903. A very slow, indolent boy, inclined to sneak and play truant.

VI–14, born 1904. A weakling, very small and slight; has not got beyond the primer.

VI–15, born 1906. A very likeable, plausible chap. The teacher has given him great care and attention during the term he has attended school, but so far has failed to make "any impression on him."

VI–16, born 1910, and VI–17, born 1913, both undetermined.

Going back two generations, we take up the third daughter (IV–8) of III–1, born 1864. Always deficient. She learned to read very little at school, and, though she could recite multiplication tables backward and forward, could never write or apply them. Made to shift for herself when very young. Had two illegitimate children (V–5, 6), born at the county home, both of whom died in infancy. Worked out in various places and later, when temporarily in the home, ran away to marry IV–9, a son of the very feeble-minded brother of IV–55, Chart A, by his marriage to a vicious, violent, sexually immoral woman. He is described as a very imp of Satan and having the face of an ape. Was brought up by IV–1, Line A, whose name he has assumed, and harbored by him until this man's second wife put him out of doors. Has always been cruel, lying, and thieving, with a genius for malicious

mischief. The following is an instance: Once when his foster-father had just finished giving the house a coat of white paint, IV–9, then a grown man, secured some red paint and daubed it all over so that it had to be painted again. This man beat his wife shamefully, and she came back to the home in the dead of winter, trundling their daughter in a little cart. IV–8 now "keeps house" for V–199, Line D, and his two children. Is a small, bent woman with long face and knobby forehead. Keeps the house neat and is devoted to this man's little sons. Her steady stream of inconsequential talk, coupled with curious judgments of people and events, mark her as plainly defective. Her little daughter (V–7), born 1908, was taken by the Salvation Army and placed by them with a family where the father drank and abused the child, so that his wife feared that he would kill her. A neighbor, whose sympathies were aroused by the situation, became so attached to her that they have legally adopted her and are giving her a good home. She is a slender, wide-awake, attractive little thing, active and helpful in the home. Is somewhat indulged by the whole family. She has pretty ways, but many little mannerisms already suggest her mother.

IV–10, the son of III–1, born 1866, is reported as immoral, good-for-nothing, with even less ability to learn than his sisters. Stole and cohabited with various women. Later was convicted of larceny and sent to the Western Penitentiary, where he died about 20 years ago of typhoid fever. A surviving daughter has not been located.

The youngest surviving daughter of III–1 is IV–12, born 1871, whose mentality is on a par with that of her brother. She was harbored for a time at the county home. When she left to keep house for her father, fell in with IV–13, who is thought to be a bastard son of a woman of good family. He is alcoholic and very abusive in his family; is not stupid, but shows much small cunning. They had two daughters, one of whom died, the surviving one (V–10), born 1883, was married off by her mother at 13 to get her away from the father's cruel treatment. She is now, at 20, an overgrown child, the mother of five children. She is trim and rather pretty, but without orderliness, neatness, or sense of obligation so far as her family is concerned. She is thought to carry on the business of prostitution on a small scale.

Her husband (V–9) is the only son of a cousin of the vagrant, sexually immoral III–35, Line D. The antecedents of his mother are unknown, since she came from Germany alone and separated from her husband shortly after this son's birth. He (V–9) describes himself as a physiognomist and a phrenologist, deeply interested in spiritual things and a natural-born musician. In point of fact, he is a big, queer-looking fellow, his mind seething with curious and unrelated ideas, opinionated and so disagreeable in his person that people hesitate to employ him on the rare occasions he chooses to work. The field-worker learned that

the mother had taken the youngest child and had gone on one of her frequent rounds of visiting. Upon looking in at the cottage, she found the father away, too, and two children penned in a bedstead, whose rags reeked with the excretions from their bodies, while in the small, dark bedroom adjoining a third child was sleeping in its day clothes. Besides the scant furniture, the place was cluttered with posters, quarry implements, and musical instruments. The malodorous air was swarming with flies, and the remains of a meal, which apparently had done duty for several days, still stood on the table. This couple are reported very quarrelsome in the home and with their neighbors, and it is impossible to foretell how they will take an intended kindness. They are also very untruthful. After a quarrel one or the other will leave, threatening not to return, but so far they have always drifted together again. Their children:

VI–18, born 1906. Reported a lively, mischievous boy, saucy and untruthful, with a droll manner of talking; is not thought mentally deficient or backward. Staying at present with his grandmother.

VI–19, born 1908. A queer-looking child with a broad face, squarish head, very small mouth and eyes, can neither walk or talk, though he is able with painful efforts to move about a little by holding on to the furniture. Neighbors say he has been kept much of his life in a dry-goods box with only an opening at the top large enough to let him in.

VI–20, born 1910. A small, fair-haired slip of a child, delicate regular features, can walk rather unsteadily, and talk a little. Is very quiet and listless.

VI–21, born 1911. Plump, well-nourished, fair-haired little girl. Sits up, but stays exactly where you put her, and never utters a sound.

VI–22, born 1912. Some of the neighbors attribute the docility of these children to the administration of drugs on the part of the parents. This has not been verified.

The youngest children of III–1 were IV–14, 15. The first, born about 1873, is said to have died as a little girl of typhoid fever; the second, born 1876, died in childhood of diphtheria, is stated to have been neglected after his mother's elopement.

Continuing with the children of Matthew and Molly Rode, we next take up III–4, born about 1835. Pronounced feeble-minded by all who knew her. Married a man who was also feeble-minded and who died in the Civil War. She spent much time at the county home, but finally died at the home of IV–1, Line A. Her son (IV–16), born about 1863, has been in and out of the home for 20 years; a toothless, gaunt old man with a bad cough; can neither read nor write nor give an account of his past. Does only roughest kind of work about county farm.

The second daughter of Matthew and Molly Rode was III–9, born about 1838. Had a fair memory but little ability to calculate. Mar-

ried a man whose mentality is unknown and died in 1853 of tuberculosis when her only daughter (IV–17) was a year old. This daughter married a shiftless drunkard. Their eldest son (V–12) is a drunken good-for-nothing. The two younger sons (V–13, 14) are slightly alcoholic and more industrious.

The next member was III–11, who married into Line E. Their children will be taken up in the continuation of that Line.

III–14, the next of the Rode fraternity, was born about 1840. Incapable of learning anything at school. She married III–15, who was known as the odd member of a wealthy Philadelphia family. Decent and hardworking; farmed and made barrel staves for a living. They never owned anything, but used to rent small patches of ground. Lived in poverty, but were always clean and law-abiding. Their children were taken by their father's people in a distant part of the State when wife died from tuberculosis. The two sons (IV–26, 28) are now poor and shiftless; drift about keeping no particular work. One daughter (IV–31) is undetermined; the other (IV–30) died at 18 of tuberculosis.

The next member of the main fraternity who married was III–19, born 1842. She was the most able and aggressive of all the daughters. Had few school advantages, but learned to read, and could perform simple calculations. Has ordinary ability in housekeeping and sewing. Married III–20, who was of German extraction, and whose family has good mentality and fair business sense. He had a common-school education; slightly alcoholic; fairly shrewd in a business deal. They have cleared a small farm and live on it in comfortable circumstances. They have had eight children, as follows:

IV–33 showed fair ability at school. Now owns a farm. Has married and has eight children, all of average or more than average ability in school work.

IV–35, his brother, is alcoholic but aggressive; a lumber inspector. His three daughters received high-school education.

The next younger brother (IV–37) is less aggressive and persevering. His four children, all small, appear to be of good mentality.

The next two children, daughters (IV–39, 41), made good progress at school. The elder is married; has no children. The younger died at 19 of blood-poisoning after the birth of a son.

The three youngest sons (IV–43, 45, 47) show average ability; make a fair living; all are married, but have no children.

Reverting to the main fraternity, we have III–22, born about 1845. Little could be learned concerning her ability or that of the man she married. He died in the Civil War, and she soon afterwards, leaving an only son. He shows fair ability; has in turn an epileptic son (V–35) by his marriage to a reckless, immoral woman, whose family is said to show other cases of epilepsy.

Continuing in the main fraternity, we find III–26, born 1848. Showed poor ability in school, but fair practical sense and skill in housework. Married, first, III–25, to whom she had no children, and then III–27, who is identical with III–15. She kept her children in school, where they made fair progress.

The eldest (IV–51) has married a drunken, treacherous man. Has six children undetermined, because the family recently left for parts unknown.

The second daughter (IV–53) was quick-witted; a capable housekeeper. Died after the birth of her first child.

The third child (IV–55), a son, is decent, but works only with slight steadiness.

The next to be considered is III–32, the youngest daughter of Matthew and Molly Rode, born about 1850. A woman of low mentality, very slow of speech and understanding. Unchaste from her early girlhood. Had four illegitimate children before she married III–34, and it is believed that he is not the father of the three children born since their marriage. He is lazy, inefficient, extremely stupid, and amply looks the part. He is the deficient brother of IV–55, page 30, and the father of IV–9, page 55. III–32 has had to spend much of her time with her children at the county farm because of her husband's inability to make a living. Now occupies a weather-beaten little house which was given her, together with 2 acres of land, by one of her sons. Another son pays for her groceries, and a grandson (illegitimate) helps with the outdoor work. Her two eldest sons have not been located.

The third son (IV–60), born 1884, ran away from home at 12 because of a stealing escapade in which he was involved. Lived in the far West, but later returned to work in the car shops, where he welds the flues for engines and earns $3.50 a day. Is a pale, very boyish looking fellow, so quiet and reticent it is difficult to make him out. Is, however, pleasant, obliging, devoted to his mother, and ambitious to save enough money to buy a farm. Has married IV–61, a half-sister of his uncle, who is 5 or 6 years older than he, and is said to have been very wild as a girl. They live in a neat but very gaudily furnished house. Have no children.

IV–59, born 1886, goes by her stepfather's name (though she is not his natural daughter). Had an illegitimate child (V–43), who now stays with his grandmother. He appears very backward and dull. For the past 10 years IV–59 has worked on a farm and is lately reported as about to be married.

The fourth son (IV–62), born 1890, is a very quiet, bashful young man who is employed in the railroad car-shops. Slow of comprehension, but steady and hardworking. Said to be deeply in love with his cousin, who, however, refuses to marry him because of their being cousins.

The second daughter (IV–63), born 1889, is a neat housekeeper, civil and obliging, and although ignorant because of her lack of school advantages, shows good judgment in matters which come under her observation. Married at 17 IV–121 after his divorce from IV–122, Line D. One justice of the peace refused to marry them because of their mental inferiority, but they went to another village and found someone who would. They have three sons.

The eldest (V–44) at 12 is in the third grade.

The second (V–45) is still in the primer, very slow, lacking in concentration.

The third (V–46), a boy of 9, is decidedly superior to his two brothers in quickness and application. Has been advanced to the second grade after two terms of school work. It is doubtful whether the retardation of the two elder is not due as much to poor teaching as to lack of native ability.

IV–65, born 1893. Of fair mentality, but always showed little application. Has some success at the various kinds of work undertaken, but sticks to nothing. Has recently married.

There remains to be described the youngest daughter (III–38)[1] of II–2, born about 1852. She is said by many to have been an illegitimate child. Her father belonged to a family who were mentally able and on the whole progressive. She is described as the "sweetest, neatest, and brightest of all the Rode girls." Married III–37, who is IV–19 of Line A. They brought up their family on a small farm and at the same time made a home for the wife's numerous dependent half-brothers. Their children, so far as they have been determined, are:

IV–68, married and had six children. She and two of her children were instantly killed by a train; a third died later from injuries received. The three surviving sons (V–50, 51, 53) are day-laborers of very moderate skill and mental ability.

IV–69 married, no children.

IV–71, a carpenter, is a man of fair intelligence; straightforward, industrious, devoted to his family, owns his own house, and is regularly employed by the railroad company. Seven children, as follows:

V–54, age 15. Likes school; quick to learn. In the first year high school. V–55, age 13. Learns easily and is in the seventh grade. V–56, age 11. In the sixth grade at school. V–57 died at 13 days of convulsions. V–58, stillbirth. V–59, age 3 years. V–60, an infant of 8 months.

IV–73 is a freight conductor on the railroad, earning $4 a day. Is earnest, intelligent, straightforward. Has married IV–74, of good family. Is living in a comfortable house furnished in excellent taste. An only daughter (V–61), born 1904, is of average mentality.

---

[1] Error in Plate. Dotted line should go to III–38.

IV–75, inferior to his brother in steadiness and ability; works in a livery stable; has several children, undetermined.

IV–77 is a good-looking, pleasant-spoken, plausible young woman. Has been married to a traveling man who made his headquarters at ———. There were charges of unfaithfulness on both sides, and after a year he left her. She now lives as a domestic and receives attentions and expensive gifts from her cousin.

IV–79, slight, civil, fairly intelligent. Married to IV–60, a flagman on the railroad. Home is in a poor section of the town in which they live, but is neat and has many simple comforts. The children are: V–65, 9 years old and looks 5, but is in the fourth grade at school. V–66, died at 3 of scarlet fever and diphtheria. V–67, age 3; wide awake, active.

IV–81, a rather slow, slovenly, silent woman. Married IV–82, a drayman, who is stolid, honest, hard working. Home is in a decent section of the town and fairly clean. Two little children (V–68, 69), apparently normal.

Summary of Line F.

It is exceedingly difficult to characterize this line. The data are incomplete, and the promiscuity of many of its members and the resulting illegitimacy have made it difficult to follow characteristics through successive generations. So far as facts were obtainable, they would appear to support the following conclusions: By reason of the diversity of the children in the second generation and through marriage into diverse strains, this line shows a strong tendency to break up into incipient strains of widely differing potentiality. Much of the threatened degeneracy is checked in the second generation by the failure of its most defective members to secure partners. Those who do marry mate with their kind, and their descendants show social inferiority, varying from a condition of imbecility which requires permanent care to one where occasional aid enables the individual to maintain a pauper existence outside of an institution. Exception to this rule is furnished by the deficient, immoral III–32. Her consorts are said, in some cases, to have been of normal mentality. Her children are of variable capacity, and all are superior to her in respect to one or more leading traits. Their doubtful paternity, however, would preclude closer analysis. The few superior members, on the other hand, through marriage into fair strains, show progressive elimination of the defects that were characteristi c of the founders.

X. LINE G.

A younger sister (II–4) of Molly Riel became one of the progenitors of Line G. She was born in 1820, died 1884, pulmonary tuberculosis. Is described as a large, powerful woman, nearly 6 feet tall, noted for her pluck and physical strength. When her neighbor's child fell into the well she went down after it, and climbed back with its dress held between her teeth, while with her hands and feet she clung to the sides. A photograph shows her to have been a handsome woman with strong aquiline features and a slight droop of her right eyelid and the right side of her mouth, caused by facial paralysis. She married, first, II–3, who died after the birth of two children, and then II–5, who had been married before, and by whom she had a large family.

The elder of the two children of II–4 by her first marriage was III–40, born about 1846. She is reported to have been of average mentality. She married (III–41) and died of tuberculosis early in her married life. Her only son (IV–83) died of measles. The brother (III–39) of III–40 was born about 1848, died at 11 years. Is reported as having been a bright, active boy. Was cruelly treated by his stepfather, and one day after a hard whipping ran away. When seen by a neighbor his stepfather had him tied to the bottom of a wagon and threatened "he'd never play him that trick again." He disappeared mysteriously and color was given to the suspicion that his stepfather had made away with him by the fact that the boy had in his own right a piece of land which the stepfather coveted. The whole countryside was aroused to search for the boy and the stepfather arrested and compelled to stand trial. The child's mother was also held as an accomplice. Nothing, however, could be proved against them although the outcome was to place the whole family under the ban of the community.

The second husband of II–4 was II–5, born about 1815, died 1890, dropsy. A very selfish, violent, treacherous man. Always said he was born "east of the mountains" and an only child. Had been left an orphan at an early age and brought up by strangers. Was brought west by some of his relatives and settled in a little village, where he practiced the trade of chairmaking and later farmed a little. He never showed much energy or purpose except in evil-doing. He was always greatly feared by his family and despised by his neighbors.

Shortly after his marriage to II–4 they moved into another county, where he was accused of and tried for the murder of his stepson in his rage at the lad's disobedience and his greed for the few acres of land the boy possessed. During his wife's last illness, when she kept

moaning that she might die in peace if only she could make one confession, he never left her bedside, even to get a drink of water, so the secret died with her. He lived to marry the third time. When this wife discovered that his small property had gone to his son, she left him. He went then to stay with a daughter by his first marriage and died there of dropsy about 1890. Was buried by the county.

There are many families of his name about his early home. They are people of average ability, industrious, and of fair integrity. It is said they are no more honest than they have to be. Most of them manage by dint of hard work to acquire a little property and a measure of independence. It is not known that any of these bear a nearer relationship to him than that of first cousin. His three daughters by his first marriage were all very deficient, but, since nothing could be learned of their mother or her family, their history will not be included here.

Of the children of II–4 and 5, one died in infancy, one (III–42) was killed at 16 by the falling of a log in a sawmill, and the third (III–47) was killed by a stroke of lightning at 14. The seven who survived to maturity were all very slow in school; some of them never progressed beyond the second reader and simple problems in arithmetic, but nevertheless have later shown practical judgment in the management of their concerns. Their histories are as follows:

III–44, born 1852. A strong, active, quarrelsome girl. At school, where she made little progress, was always a match for the roughest boys. Married III–43, a man of fair mentality, but alcoholic and with insane tendencies, whose family show ability and were among the first settlers of the county. He was a widower with two daughters, whom she abused shamefully; she also managed him. She was so strong that she thought nothing of lifting a plough or carrying a barrel of vinegar up from the cellar. She had an intrigue with a neighboring farmer (III–46), who used to go on sprees with her husband, and when her "goings on" so preyed on her husband's mind that he tried to drown himself in the well, she pulled him out much against his will. Eventually he set fire to a mow of hay and burned himself to death in the flames. III–44 thereupon drifted about with her children, cohabiting with various men. When the wife of her former paramour (III–46) ended her misery by suicide she married him, but they quarreled incessantly and she did not stay with him long. For 8 years now she has "kept house" for a queer, stupid, alcoholic old man who owns a few acres of ground. Their home is a granary. It has two tiny dark rooms crowded with old furniture, bags of seeds and grain, walls hung with many enlarged pictures, chromos, and dried plants. Every available corner is crammed with bundles of old newspapers, and there if no place to sleep unless on bedding spread on the floor at night. She

is now much broken in health, suffering acutely from pain in her head and back. Has also had dry gangrene in her foot, which resulted last winter in the loss of her great-toe, and now the trouble has attacked the other foot. Her children are:

IV–84, born 1870, died 1872, brain fever. "Took fits when a little baby, afterwards his head grew and his body did not, then brain fever set in and carried him off."

IV–86, born 1872, died 1898. Described as a chaste, bright, attractive girl. Married IV–85, who has been employed as "handy man" and carpenter. She was taken with a violent pain in her head; other symptoms indicated appendicitis. She died within 24 hours after an operation. IV–85 is now married again. Is said to have no interest in his daughter (V–71), who is living with her father's people and pronounced attractive and talented. Attends high school, where she shows average rate of mental development. Her brother (V–70) died at 7 months of cholera infantum.

The second son of III–44 was IV–88, born 1874. A man of fair mentality who could work if he would, but who shirks. Is alcoholic and altogether too fond of low company. Has married IV–89, of fairly good stock; plump, pleasant-spoken, capable, but gives the impression of having given up trying. They live on her father's farm, but do not pretend to work it properly; buildings neglected, implements rusting in the weather, the old house bare of furniture, ill-kept, swarming with a troup of very ragged, dirty children.

The eldest (V–72), a boy of 17, does what he can to keep the farm going.

The other son (V–75), a boy of 8, appears very dull and backward, having never been well since he was sick with the whooping-cough.

Four girls, ages 12, 10, 6, and 4, respectively, are small for their ages; too shy to give a clue to their mentality.

A second daughter (IV–90) of III–44 was abused and put out-of-doors by her mother, and thus fought her own way from a girl of 12 until her marriage. She and her husband are very ignorant and slow mentally. He belongs to a strain which shows great stature and considerable mental backwardness. He attended district school in winter until 20 years old, but does not know what fractions and percentage mean. He reads the newspaper, but always finds many words he can not understand. Is employed as car repairer on the railroad. His wife is more ignorant than he, but is a good housekeeper and seamstress. Two of their children (V–79, 82) died in infancy of pneumonia. Of the remaining children, three are in school and two at least are greatly retarded. They did not walk until they were 3 years old. The eldest is in sixth grade at 13 years, and two are in the second grade at 9 and 10 years respectively.

IV–92, the youngest son of III–44, was probably fathered by a man of good mentality whose family show excellent business sense. He was born in 1880. He lived about with his mother anywhere, from his second to his eleventh year, then went one day to the house of some well-to-do farmers begging for the heads and livers of some hogs they were butchering; told them, too, how much he wanted to go to school. Although the woman of this house already had seven boys, she found room for one more, and from that time he was given his chance. He was scarcely able to read and write at 11, but attended school regularly, working summers and "choring" for his board in winters, until at 20 he was finally graduated from high school. He found mathematics particularly difficult, but at 18 took a stiff course in mental arithmetic and has no trouble with that since. He retains his interest in fiction and history and is decidedly well-read. He discusses intelligently topics of the day. For a time after his graduation he worked on the railroad, but four years ago was taken into the employ of the foster-parents, who own a large bakery. He now transacts $60 worth of business a day and rarely makes a mistake; is paying for a house worth $3,000. He is a tall man, of excellent physique, well-marked features; honest, clean, straightforward, aggressive, reliable. His employers say he is indispensable to them in their business. He is devoted to his good-for-nothing mother, whom he offers a home in her old age. Has married a girl who is his inferior—nervous, hysterical, jealous, complaining, dependent—whose family has at least one mental defective. Their only son (V–86) is a lively, attractive boy of 3.

IV–94, who is a son of III–44, by her alcoholic, immoral second husband, showed no disposition to get on at school or at any particular trade. Loafs and works about for farmers.

The next child in the main fraternity was III–48, born 1855. Very dull and backward as a boy in school and has suffered from epileptic seizures all his life, which, his family claim, were greatly aggravated by an electric shock he suffered at the time of his sister's death from lightning-stroke. He has been very persevering and hardworking in spite of his affliction. Reared a large family and acquired a farm of about 100 acres; everything about the place in excellent repair. Suffered from a severe illness last winter, when he was unconscious for hours, but now is as active as ever. While at times he shows mental confusion, incident to epilepsy, he is strictly honest and has much shrewd sense in the conduct of his affairs. He married III–49, born 1854, who comes from a family showing much alcoholism and eccentricity. She was the eldest child and one of the ablest in her family. Worked among strangers from early girlhood and had an illegitimate

child before marriage. Shows herself to be alert, civil, neat, with much practical sense. Children are:

IV–96, born 1879. Rather slow at school and never finished the grades. Married at 17, IV–95, born 1873, who comes from stock noted not so much for their stupidity as for their cupidity. His immediate family is of good repute. His four sisters were all of good mentality; the 3 surviving married, begetting wide-awake children. He was an only son; progressed well at school, where he showed good calculating ability; has a farm, is fairly industrious and prosperous; accounted honest and a good citizen. This couple have had seven children, of whom the youngest died at 3 of stomach trouble. The three eldest (V–87 to 89), all girls, are rather shy and reserved, but are considered above the average in school ability, showing quickness and great application. V–90 is able but mischievous, while the two youngest (V–91, 92) are wide-awake and active.

IV–97, the eldest son of III–48 and 49, born 1882, was dull and backward at school and has had an occasional "fainting spell." Has married IV–98, whose people were of German origin, prosperous farmers and of fair intelligence. She is the only surviving child, one sister having died. They live on her father's farm, and work it successfully. They have an only son (V–94), born 1904. Active and alert. Bad growth of adenoids, but advancing well at school.

IV–99, the next daughter of III–48 and 49, born 1884, died 1906, childbirth; was always small and delicate, and troubled with fits, making little progress in school. Her child lived and is being brought up by his maternal grandparents. Very slow in speech and movements.

Another daughter (IV–101), born 1887, was the only one of this family who finished the grades. Very slow and stupid in school at first, but in her teens appeared to improve. Has had very bad epileptic attacks all her life, when her teeth would lock and she would lie unconscious for hours. She married a year ago. She is a pretty, pleasant-mannered, lively young woman of average intelligence, whose sexual morality is in question, but who in her person and the appointments of her home has plainly profited by her association with people of greater refinement.

IV–103, the younger brother of IV–101, born 1889, is strong physically, but was also slow and stupid in school, never advancing beyond the third grade. He is now a brakeman. Married, but has no children.

IV–105, the next in this fraternity, born 1892, is also strong physically, but so slow and backward in school he could not advance beyond the first grade. Helps his father on the farm, where he appears to show average practical sense.

IV–106, younger sister, born 1895, is a tall, dark-eyed girl, rather silent and slow. Stopped school at 16 when in the eighth grade, saying she had gone long enough.

IV–107, the youngest, born 1897, is a large, sturdy fellow, good worker, but also rather slow at school. His mentality on a par with that of IV–106.

Returning now to the main fraternity, we take III–51, born 1857. Always dull at school, and as he grew up worked at woodchopping. Ox-like in his stupidity and strength. Married III–52, the sister of his brother's wife (III–49). She was not considered "bright" either. Eighteen years ago moved into another county, where he now owns a good farm of about 90 acres. Seems to have enjoyed a belated mental development which even old acquantances remark. It is said that when he attended the weekly fair as a young man he made frightful mistakes in prices and change. Is now self-possessed, straightforward, quick in his statements, accounted a business man of fair shrewdness. Physical strength and endurance prodigious. His children are:

IV–108, born 1880. Went to school until he was in his teens, but was never able to progress beyond the third grade. Now working on the railroad.

IV–111, born 1882. Showed little ability and interest in school. Has married and lives on a farm. Has five boys (V–96 to 100); history undetermined.

IV–113, born about 1884. Went to school with fair regularity, but did not get a start until she was 17 or 18. Finished the tenth grade at 19 and followed it with a two-term teacher's course at the normal school. Taught successfully at the district school. Now married to a graduate of the normal school. He was brought up on a farm and has been only moderately successful as principal of a village high school. They have two little daughters, V–101, born 1911, and V–102, born 1913.

The next younger son (IV–112), born 1887, had convulsions in infancy, and what appeared to be an attack of grippe developed into brain fever, causing his death at 17 months.

IV–115, the next younger daughter, born 1890, was not very fond of school. Has married and lives with her husband on his father's place. No children.

IV–117, born 1892, is a slow, sturdy, powerful fellow. He went through the grades, but did not care for more schooling. Works on the home farm.

IV–118, born 1898, is a rather shy, good-looking girl. Doing excellent work in her first year high school.

IV–119, born 1907, is a very active, vigorous boy, but pitifully shy. Quick in his school work when he finally overcame his timidity.

Going back to the next child of II–4 and 5, we take up III–53, born 1860. She showed fair ability at school. Developed into a careful

housekeeper and shrewd business woman. Married III–54, who was half-cousin of the III–56 whose family will be described later. This couple lived much of the time on the farm of the father of III–54, but now own their own farm. Their children numbered five.

Of these, IV–120, born about 1885, is a fine-looking woman. Considered very capable in practical matters. Has one little girl (V–103), apparently of average ability.

IV–122, born about 1888, died 1901, typhoid fever. A rough sort of fellow, but hardworking and economical. His wife is a questionable character. No children.

IV–124, born 1890; died in childbirth. Her husband is a brother of III–49 and 52. He is eccentric. Suffers from tuberculosis of the joints. Their second child (V–105) died with the mother, the first shortly afterwards with convulsions. Besides these, the fraternity included two others, IV–126, a son, and a daughter, IV–127; of undetermined history.

The next member of our main fraternity is III–55, born about 1862. He is quite as slow and stupid as his brothers, and as a young man was careless, inclined to drink and spend his money. Since his marriage is entirely dominated by his wife. Is hardworking, but very simple and credulous. His wife (III–56) comes from a family known for its alcoholism, sex immorality, and quarrelsomeness. They own a farm of 70 acres. Have worked and scraped until able to put up a fine house, handsomely furnished, which is kept entirely for show. It is said, too, that in order to pay for this, the wife went begging, representing herself as a needy widow with many helpless chidren. Her family are sent to school in scanty clothing in order to excite the pity of people and secure donations. She is hardworking, ignorant, greedy for material things; lacking in pride and independence. Their children may be characterized briefly as follows:

IV–128, born 1892; had no interest in school, now said to be wild, with drink habit already established.

IV–129, born 1895. Overworked at home and therefore married, much against her mother's wishes. Husband reported capable and very well off. One little daughter (V–106).

IV–131 and 132, born 1896 and 1898 respectively. Dull, listless boys. Have the appearance of being half-starved. No interest in school and have ceased to attend.

IV–133 and 134, born 1899 and 1903 respectively. Both apparently of normal mentality Up with their grade in school.

IV–135 and 136, twins, died of cholera infantum.

IV–137, an infant. Smothered to death accidentally by the mother on her way to market.

IV–138 and 139, twins; premature birth.

The next member of the main fraternity is III–57: her marriage into Line E will be considered later.

Finally we take up III–59, the youngest of the children of II–4 and 5. He was born 1867. Was like his brothers in his inability to learn as a boy, but is a man of powerful physique and a tremendous worker. Has married III–60, a cousin of III–52. She is small, slight, hollow-eyed, and quite worn out with hard work and child-bearing. With the help of their children they cultivate a 300-acre farm. Their only ambition is to save money enough for a farm of their own. The three eldest daughters are good-looking, of fine physique, but very ignorant. The younger ones, small for their ages, shy and mentally retarded. The only grown son (IV–147), born 1892, looks 16 rather than 21. Awkward and clownish. Stupid in school. This family is extremely hardworking.

One child (IV–132) in this large fraternity is dead. Had convulsions at 2 years and 5 months; death following illness in 24 hours.

The Fraternity of III–49 and 52.—This fraternity was derived from a lazy, alcoholic father and a faithful, hard-working mother, and came from a strain on the father's side representing much alcoholism, shiftlessness, eccentricity, religious fanaticism; on the mother's side, sobriety, plodding industry, thrift. They were born and brought up in a little shack of three rooms. Were slow at school, and few of them attended long enough to learn to read and write. As soon as they were able, went out to work among strangers. They comprise: A sister who is a hard-faced, hard-working woman who washes and scrubs by the day and spends everything she earns in drink. Another sister has never talked plainly, but knows enough to do plain house-work. A brother, who married IV–124, suffers from tuberculosis of the joints. Since his wife's death lives with his mother and works about by the day. Two brothers are unmarried and living at home, alcoholic and eccentric, while two are married, but present whereabouts and condition unknown.

The father of this fraternity had three brothers who drank to excess. One had great pride in his farm; built the finest house in the community and kept everything in excellent repair. Another brother drinks too, but owns and works a decent farm. He quarreled with his wife and separated from her, she taking two of the children and leaving him two. One of these is III–60, who has married III–59 and is the mother of the dull, hard-working family described above.

The Fraternity of III–56.—Brothers all reported alcoholic and very quarrelsome, with the exception of the one who provided his poor hard-working mother with a home in her old age. Their father was, known everywhere as a drunkard and a quarrelsome ne'er-do-well. The mother was honest and very hard-working. III–56 and III–54,

who also married into the main fraternity, belong to a clan with extensive connections in this part of the State. They do not show marked mental defect, but certain branches have a bad history of drunkenness, bickerings, seduction, and general sexual looseness.

Summary of Line G.

Line G is characterized by mental dullness combined with great perseverance and physical endurance. These traits serve, in the long run, to establish the independence of their possessors as farmers and mechanics. Certain members, too, seem to undergo a belated mental development which at 35 or 40 makes good earlier deficiency. In these branches, too, marriage into strains showing a normal rate of mental development appears to effect an acceleration, whereby the mental unfolding comes increasingly earlier in the history of the individual. While this good result has been brought about by marriage into strains of fair mentality and of average rate of development, we find, on the other hand, the marriage of one of its most defective members (III–57) to a representative of Line E, resulting as described in the following section.

XI. CONTINUATION OF LINE E.

Let us consider first the mating of III–11, Chart B, of the Rode fraternity with III–47, Chart A. She was born in 1845 and died about 1882, of typhoid malarial fever. She was always considered defective; could not learn at school, and showed little judgment in the care of her family and home; was in the habit of begging for her children and was also charged with practices which throw doubt on the paternity of some of her children. It is said that her marriage was the result of a momentary impulse. Walking along a country road, she encountered two of the Rode boys and said to one of them, "come on, let's get married." He, however, refused, but his companion, who was III–11, stepped up and in the slang phrase of the day remarked, "I'm your huckleberry," and they went straight away and were married.

They lived on the 17 acres of ground which was her share of her father's farm, where, it is said, her husband sometimes succeeded in raising a fair crop. Whenever he did so, he would buy up two or three decrepit horses to winter on the crop and die in the spring. When designing people tried to get possession of this land at too low a figure, a committee of well-meaning citizens interested themselves in having a guardian appointed for him, but when it came out in the hearing that the best of them had occasionally been worsted by him in a bargain the project was abandoned. While grossly defective in judgment, he still showed a certain small cunning which his fellow-citizens might have outwitted had they considered it worth while.

Their three sons (IV–123 to 125) fell ill of scarlet fever. Two died and the eldest was a little better when the mother insisted on taking him out in the rain to visit her mother. This brought on a relapse and his death. She died of typhoid malaria fever, and the father assuming no responsibility for the care of the three surviving children, they were taken to the county farm. He wandered about, living part of the time at the county home and part of the time with relatives. In 1906, was committed by the county commissioners to a hospital for the insane, where he died 1913. Following is the diagnosis and later history as submitted by that institution:

"Patient admitted ——, 1906, from the C. Home; aet. 63, single, farmer: diagnosis, chronic mania. The statement on admission was as follows 'The first symptoms of insanity noticed 6 months ago. He would cut off the manes and tails of colts. Has threatened to kill some of the inmates of the county home. He seems to have grandiose delusions. One brother had apoplexy; several brothers are in the county home. For about three years after admission his health was good; mentally was cheerful, contented; conduct was fairly good, although his manner was silly; was occupied constantly in outside work. His health then began to fail gradually and he was unable to work at times. He was frequently seen mumbling to himself and he collected a great deal of rubbish in his room. He died ——, 1913, cause gangrene of right lung and chronic interstitial nephritis."

The children of this couple who lived to grow up were:

IV–126, born 1876. Committed at the age of 7 to the county farm and from there taken to a training school for feeble-minded, where she learned to read in the first reader and to count to 25, and secured some training in household arts. Later transferred to Institution for the Care of the Feeble-Minded, Polk, Pennsylvania, where she has been a patient for 16 years. At present is a heavy, rather stolid woman, much below the average in height; senses and speech normal; no striking physical defects; expressive brown eyes; and on the whole pleasing expression and obliging manner. Can do most kinds of housework, but is little interested in needlework or employing what she knows of reading or writing. She has an excellent memory for details of her own experience and stray facts concerning her relatives, but is greatly lacking in number sense, judgment, causation. Is very persistent and even stubborn at times; on rare occasions has been rebellious and even violent, but in the main agreeable, contented, and thorough in the performance of her work.

IV–127 was a brother of IV–126, born 1881, died 1907, after having been struck by lightning. Described as a well-built, perfect specimen of physical manhood. Dark hair, brown eyes, and symmetrical features. No apparent stigmata of degeneracy. Could not learn to read or write. Worked as a farm-hand in a training school for feeble-minded, where his help was appreciated as that of a paid employee. Subsequenty he left this school and got employment with a neighboring farmer. The boy was sober, thrifty, and very clean in his habits and dress. A few years later he was struck by lightning while tending some horses. Graded as a mid-grade imbecile.

There remains to be considered IV–128, born about 1879, who is said by some to be an illegitimate child. Was taken from the county home by a man who was attracted by her lively, pretty ways at the time her sister (IV–126) went to the training school. She had a comfortable home; received training in church and school, easily keeping up with her grade in the latter; was always bright, active, and fun-loving. At 16 came into conflict with her foster-parents because she wished more freedom; and was allowed by them to shift for herself. At first sold Larkin soaps and other articles for a livelihood, but later took a nurse's training course and graduated in 1898. She was very successful as a nurse. In 1900 married IV–129, who, though master of arts and a clergyman, seems withal to be rather erratic, since, in addition to several pastorates, he has in the last 10 years acted as secretary of a political party, manager of an orphan home, and teacher in the public schools. IV–128 seems to be very proud of her husband in all his capacities. She is rather effusive and superficial; apt to forget

those who have helped her, but is resourceful, aggressive, persevering. Their two children (V–244, 245) she describes as strong and intelligent as any would wish to see; the former (a son) was born in 1902, the latter (a daughter) in 1908.

Let us consider finally the mating of III–50, Chart A, who is identical with III–58, Chart B. III–50, born 1848, is lacking almost entirely in sense of number and quantity. Never able to learn to read or write or plan any kind of work properly. Is nearly blind. Was unable to find a life-partner in his native village, but persuaded III–51, in a neighboring county, to marry him, much against her people's commands. She was born 1863. Held to be the weakest member of her fraternity. Was unable to learn in school, though she attended many years. Her later history, however, would indicate her case to be one of mental backwardness similar to that of her brothers, only more extreme, rather than one of absolute defect. She has, too, in good measure the physical endurance and persistence characteristic of her family. Shows much caution and cunning and makes a tool of her simple-minded husband. Is dishonest, untruthful, vindictive, sexually immoral. They have always lived in a two-room shack on the $17\frac{1}{2}$ acres left III–50 by his father, which they make a pretense of cultivating, and eke out their scanty livelihood by working for their long-suffering neighbors and cheating them in various small ways. All of their four children were feeble-minded, and the three who grew up were so mischievous and so neglected by their parents that the whole family was looked upon as a public nuisance. The eldest daughter had previously been committed to the Institution for the Care of the Feeble-Minded, Polk, Pennsylvania; later an effort was made to give them all custodial care. They were taken in 1904 to the county farm, but the parents fought so hard for their liberty that they were allowed to return home, while their two boys were committed to Polk.

For a number of years now the parents are said to have been doing much better than they did in former years. They seem nearly equal to the problem of caring for themselves. They have gained some appreciation of the value of money; handle small sums with a degree of accuracy and have a fair power of calculation as to their simple needs. They work with fair steadiness, although not always very satisfactorily. Pay some of their debts, but are still allowed to cheat their benefactors in numberless small ways. For example: III–51 will ask that the neighbors keep her preserves in their cellar over winter. When spring comes she declares that she has not as many quarts as she put into the cellar, and to keep the peace they will give her some of theirs. In getting change at the village store she has been known to come back and say she was a dollar short and thus secure an

extra dollar from the storekeeper. When III–50 promises an even exchange of grain, say rye for oats, he has been known to substitute a bag of chaff. All this is allowed, apparently on the principle that the community would have to help them out a little in any case, and it might as well do it in this manner as in any other. The wife's memory for recent dates is excellent. Their children are:

IV–130, born 1882, died 1911, pulmonary tuberculosis. Her defects were apparent from early childhood, showing in her voice and facial expression. Her body developed normally, although the head remained rather small. She showed herself indolent, gluttonous, and liable to bursts of temper; was not able to feed or dress herself properly. Could not learn to distinguish form or anything more than the most pronounced colors, such as red, blue, white; could not count to 50 or spell more than a few very simple words. Articulation so poor she was unable to speak a word of two syllables. At school sat and grimaced most of the time, and at home ran the roads, smoked, and played with matches. As she grew older consorted with tramps or any wayfarer who chanced to come by. Placed in the custody of the director of the poor and in 1897 was committed to the Institution for Feeble-Minded, Polk, Pennsylvania. Her medical examination revealed no marked physical abnormality except myopia and internal strabismus of both eyes, with some chronic condition of pharyngitis. Classified as a mid-grade imbecile; without educational attainments. Placed in school but made very little progress. Never learned to sew or work in basketry. She pared vegetables for the meals and later confined her efforts to dry-scrubbing. Disposition quiet, inclined to peevishness. Passive type of defective. Got into trouble mainly at the instigation of others. In 1909 had an attack of pneumonia; in 1910 had a second attack of pneumonia; in 1911 declared to be tubercular. Died June 1911. The funeral of this young woman appears to have been the crowning social event of her career. From an earlier attitude of fear and antagonism, the parents have come to regard their children's detention at the Institution as a social distinction, and regale their neighbors and friends with marvelous tales of their importance in the economy of the place. The arrival of the daughter's body was the signal for a great gathering of the Rufer clans, the occasion being marked by much floral display, drinking, animated discussion which amounted at times to quarreling and fighting, further enlivened by numerous epileptiform attacks on the part of the bereaved mother. Still the event passed off without serious mishap, leaving nothing but the tale of its departed glories and the unpaid bill of the undertaker.

IV–131, stillbirth about 1885.

IV–132, born about 1887, died about 1892. Lived to be nearly 5 years old and showed noticeable mental defect; neglected by his

mother. One day while playing with matches set fire to his clothes and was burned to death.

IV–133, born 1890. Health always good, senses normal, walked at 18 months and talked at 2 years, but articulation poor, all words being reduced to one syllable. Always active, vigorous, mischief-making. Mental defect early became apparent. Color and number sense failed in development almost entirely under conditions at home. Could run errands, carry wood and water, but for most of the time was meddlesome, disobedient, on the roads, or up to some senseless prank all day long. Committed to the Institution for the Care of the Feeble-Minded, Polk, by the county directors of the poor, 1904. Medical examination February 1908 showed nutrition good, reflexes absent, no marked physical defect excepting enlarged tonsils and rather poor circulation. Classified as a mid-grade imbecile. Placed in school and proved a very talkative, inattentive child. In the course of 6 months learned to sit still, do paper-pasting and cutting, managed to do the Klondike-step, and to count up to 5. Improved during the following year until he became very helpful as an errand-boy, and learned to sew carpet-rags; but showing no advance whatever during the ensuing year (1906–7), he was taken out of school to help in the cottages. Since he could not be relied upon to perform many household tasks acceptably, now helps in such outdoor work as pushing the lawn-mower. Is a pleasant-mannered boy, usually grinning, very fond of baseball and other sports. The circle of his interests limited to mamma's visits and the county fair.

IV–134, born 1892. General health always fairly good, but slightly less vigorous and active than his brother. Walked at 2 years and 3 months. Had "warm fits" when a year old, and mental defect noticeable from early childhood. Appetite and sense of taste were normal. Could tell colors but badly, recognize form, and distinguish pictures. Learned to talk and sew, able to utter polysyllables, though indistinctly, always rather quiet and good-tempered. Less aggressively mischievous than his brother. Committed to Polk, 1904. Medical examination showed nutrition good, general appearance anemic, reflexes normal, no physical defect excepting weak heart and partial optic atrophy. Classified as a mid-grade imbecile. When placed in school talked a great deal. He showed some capacity for education and interest and improved in his conduct. Showed considerable persistence, until at the end of a year and a half he could sew carpet-rags and baskets beautifully and count up to 10. During the ensuing year (1906–7) learned a number of new words, read a little from books, and handled very small numbers and quantities successfully. School work continued for 3 more years, when it was found that he had completed 82 pages of Cyr's second reader. Learned to recite addition and

multiplication tables up to 40, but was defective in the application of his knowledge; writing was always very illegible. Since he appeared to be at a mental standstill for nearly the whole of the last year, was taken out of school 1910. Could be relied upon to polish floors and mow the lawn. In spite of his superior attainments and his slightly larger fund of general information, is rather more timid and retiring than his brother, who looks to him for counsel in whatever emergency may present itself.

Summary of Line E.

Line E may be summarized as one which, by reason of the matings of its defective members with individuals carrying similar defects, has never gained traits necessary for social efficiency. It we except IV–128, who is thought to be illegitimate though of unknown paternity, no member of this line has been able to maintain existence without much charitable aid. Whereas slight perseverance and aggressiveness have in some instances been brought in, calculating ability and other mental traits have been too uniformly lacking to make the former of avail. With the single exception of the illegitimate IV–128, who has married into a fair strain, all later representatives of this line are without issue, since they are in the custodial care of the State. The defects of this line accordingly bid fair to terminate with the present generation.

XII. GENERAL SUMMARY OF LINES.

Both networks comprise widely divergent lines. As we follow the history of these lines, their trend appears to be determined by the combination of traits carried by their various founders, taken in conjunction with the leading traits of the strains into which matings occur. In all the founders and their consorts there was a noticeable presence or absence of socially effective traits. In the four better lines, namely, A, B, C, G, whose founders, though weak in certain traits, were superior to the founders of the remaining lines, there has been, through advantageous mating in successive generations, improvement in the grade of trait and in the combinations of leading traits. In every generation there is a sifting out; where weakness marries strength, the defect may appear in the following generation, but it appears in a lessening degree and in a smaller proportion of the offspring. This has resulted in the practical elimination of defects characteristic of the founders, in increased efficiency, in an advance in economic worth and welfare. With slight exception all living representatives of these lines are self-supporting, self-respecting citizens, measuring up to the standard of their several communities and contributing materially to economic advancement.

Of the remaining lines, one, namely Line E, is marked at its beginning by the absence of socially effective traits; matings with equally defective individuals have produced a continuous line of defectives receiving institutional care, which fortunately is ending with this generation.

The Lines D and F continue to be varied in character: both show in the third generation, through the bringing together of complex strains, a mixture of defectives, degenerates, and socially fit individuals. The last named, by marriage into fair strains, are repeating the history of the better lines of these networks. The defective and degenerate members, however, outnumber the fit, and by union with similar members of their own or other socially unfit strains are giving rise to branches whose characteristics are shiftlessness, alcoholism, petty criminality, sexual immorality, and imbecility. Left to themselves, the degenerate offshoots of these lines have gravitated toward the degenerate members of other bad strains, and their mating has produced nothing but degeneracy.

With one exception, representatives of these branches are all at large. Tracing them as they have drifted from place to place has been like following the trail of a serpent; in every community they constitute its dregs; the petty thief, the clandestine prostitute, the ignorant ne'er-do-well depending on private charity; many of them, too, are frequent candidates for county aid and a continuous drag on the community which harbors them.

XIII. HERITABILITY OF SOCIALLY EFFECTIVE TRAITS.

In tracing the history of such traits as the ability to calculate, aggressiveness, and perseverance in the foregoing, the lesson seems clear that through selective matings the grade of these traits may be noticeably increased or diminished. For example, in Line C, a comparatively low ability to calculate has, through selective matings with good or average ability, been built up into an ability well above the average. This holds true also of aggressiveness. In Line D, on the contrary, ability to calculate and aggressiveness, through matings with a very low grade of these traits, has persisted at the low level shown by one of the original founders. In the same way the trait-complex of perseverance may be followed and found to move up or down according to the type of mating made.

Let us now see how far the behavior of these traits in inheritance conforms to Mendel's law. At the outset of this discussion we wish to concede that our data, since they appertain to mental and temperamental traits, do not permit of the accuracy of measurement possible in handling physical traits. Our conclusions, accordingly, must at best be only approximations to the truth. Our only justification for attempting to carry Mendel's principles into this domain is the value which even tentative and approximate conclusions may have for fruitful effort along similar lines in the future.

1. Calculating Ability.

Considering the wide range of calculating ability in the general population, it would seem unreasonable to suppose its manifestation to be due to a single unit character. Unfortunately, too, we know too little of the grade of this ability in the stocks into which the earlier descendants of Aaron and Mary Rufer married to fit the distribution in the various fraternities to a mathematical formula. But here the faculty is also present in such variety of degree as to forbid the conclusion that it is due to a single unit character, unless we ascribe this variation in grade to a variation in potency of the unit character. Such variation in potency would be comparable to that invoked to explain the phenomena of inheritance of many physical traits. In these cases, while there may not be a regular Mendelian proportion, dominance and segregation seem nevertheless to be taking place. Here, too, the degree of development of the somatic character is often an index of its strength in the gamete, and selection of the individual, though of secondary importance to the selection of the strain to which he belongs, still appears to play a part in the grade of development attained in the offspring; that is, an individual, possessing a characteristic in high degree, will with a certain mating produce a higher degree of that characteristic in his offspring than would a member of

the same strain who possessed a lower degree of the characteristic in question.

Again we may regard an occurrence of calculating ability as due to a number of determiners, a single dose of determiners producing a lower ability than a double or quadruple dose, their joint action not differing in kind, but differing only in quantitative effect. Here, too, if the number of determiners is relatively large, there is the probability of an individual who shows high ability carrying a larger number of these determiners than the number carried by one who shows low ability; but whether this ability be due to a single determiner varying in potency or to several determiners, we may now profitably ask what measure of agreement do we find between behavior of these hypothetical determiners and the behavior of dominants and recessives in the typical Mendelian proportion?

If we let C stand for comparative presence of determiners for calculating ability, and c stand for their comparative absence, we have the following combinations possible in the union of germ-plasms: CC, Cc, cc. CC would develop relatively high calculating ability, which we may indicate by H. Cc would develop mediocre ability, indicated by M. cc would develop very low or no calculating ability, indicated by L.

Distribution of these abilities from various types of mating may be represented as follows:

cc and cc = 100 per cent cc. All children show very low or no ability.
Cc and cc = 50 per cent Cc and 50 per cent cc. Half the children show medium ability, half very low or no ability.
Cc and Cc = 25 per cent CC and 50 per cent Cc and 25 per cent cc. One-fourth the children show high ability, half show medium, and one-fourth very low or no ability.
cc and CC = 100 per cent Cc. All children show medium ability.
Cc and CC = 50 per cent Cc and 50 per cent CC. Half show medium ability and half high ability.
CC and CC = 100 per cent CC. All children show high ability.

In the studies of distribution as actually occurring in the networks under consideration, the germinal constitution has been inferred in accordance with the formulæ just given, that is, low ability has been taken to indicate the germinal constitution cc, or all germ-cells without determiners necessary for calculating ability; in the same way, medium ability indicates the germinal constitution Cc, or half the germ-cells with sufficient determiners and half without; while high ability indicates the germinal constitution CC, or all germ-cells with sufficient determiners for the functioning of this faculty.

We will examine first the distribution of various grades of this ability from parent to offspring in the Rufer group. Although measurements are far more difficult than with most physical traits, still we may arbitrarily fix the following three classes, the various grades of the

traits being distinctly lower in this group than they would be were we considering the general population:

Class 1, indicated by L, includes all those having no ability to handle figures beyond 5; Class 2, indicated by M, includes all those having ability to perform simple multiplication and division, and make small change; Class 3, indicated by H, includes all those having average ability of the general population. The theoretical expectation of the results of matings between members of these classes, based on the relative presence and absence of determiners for calculating ability, has already been given. The progeny of 48 matings of this group, including 177 offspring, may now be distributed among these classes, and the percentage realized compared with the theoretical expectation. Table 1 gives in the first line the expected percentage, and in the second the percentages as realized for the group in question.

TABLE 1.—*Calculating ability. Rufer group. 48 matings, 177 individuals.*

Matings	L and L			L and M			L and H			M and M			M and H			H and H		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Expected....	100	....	....	50	50	....	....	100	....	25	50	25	....	50	50	....	....	100
Realized.....	100	....	....	52^9	33^3	13^8	30	60	10	18^5	70^4	11^1	13^1	39^1	47^8	....	2^4	97^6

The realized percentages support the following conclusions: (1) When both parents show a low grade of this trait, all the children are similarly of low grade. (2) When both parents show a high grade of this trait, practically all the children are similarly endowed. (3) When one parent shows a low grade and the other a medium or high grade, the increase in the percentage of medium and high is proportionate to the grade of the better parent; that is, if the better parent is high grade, there will be fewer low grades among his offspring. (4) Although a small proportion of low grades is produced by the mating of a medium grade with a medium or a high grade, here again the proportion of low grades is smaller when one consort is high grade than when he is of medium grade (decreasing in the group studied, from 18.50 to 13.10). In case he is high grade, there is, too, a considerable increase in the proportion of high grades among his offspring (increasing in the group studied from 11.10 to 47.80).

The fairly close accord between the theoretical expectation and the realized percentages supports the view that the grade of the ability to calculate depends for its manifestation on the comparative presence or absence of the determiners for this ability. The behavior of these determiners in inheritance is the same as that of the dominants and recessives of the Mendelian hypothesis. There is segregation here, but not the dominance observed in many of the experimental heredity

studies; the single determiner or the halving of the total number of determiners producing a lower grade of the trait than when a greater number are present. The case would appear to be analogous to that observed in the inheritance of eye color, where the single dose of the determiner for pigmentation produces light-brown eyes, while the double dose produces darker brown.

A similar study of the distribution of grades of calculating ability was made of the Riel group. 32 families, including 120 individuals, were distributed among three classes, only in this instance different values were assigned to the three classes L, M, H. L includes all those with ability to perform simple multiplication and division and make small change and hence equals class M for Rufer group; M includes all those possessing average calculating ability, hence equals class H Rufer group. H equals those with ability above the average. The distribution of progeny from the various types of mating is shown in table 2.

TABLE 2.—*Calculating ability. Riel Group. 32 matings, 120 individuals.*

Matings	L and L			L and M			L and H			M and M			M and H			H and H		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Expected....	100	....	....	50	50	....	....	100	....	25	50	25	....	50	50	....	....	100
Realized.....	86^6	13^4	....	47^6	52^4	....	....	70	30	28^6	42^8	28^6	5^7	38^8	55^5	....	....	.....

The realized percentages from this group support all the conclusions drawn from the study of the Rufer group, with the exception of the second conclusion, the mating of high ability with high ability not having occurred here.

The assumption of a unit-character of varying potency, or better, of a number of determiners which behave in unit-like fashion, would appear to explain the phenomenon of inheritance for calculating ability as observed in these networks. So long as low ability mates with low ability there can be no advance in this faculty, since the germplasm remains relatively empty, so far as determiners for this faculty are concerned. Such a condition is illustrated in Line E. However, let successive matings occur between those having low ability and those of fair or good calculating ability belonging to strains showing this ability, then the unit of higher potency will replace that of low potency in an increasing proportion of the offspring: this will be equivalent to the gradual elimination of the unit of low potency, and will bring about improvement in the grade of calculating ability.

If we adopt the hypothesis of the unit-like series, we may conceive the number which stands for presence in a slight degree, to be replaced by the greater number which stands for good ability in the better

strains. Should this occur for a number of generations, the point may be reached where fair and good ability would still appear in the offspring, even though there be outmating with very low ability; that is, relative absence in the germ-plasm of the better consort would behave as relative presence to the lack of determiners in the weaker consort; the resulting simplex individual would show and be able to transmit fair ability. The only serious danger would accrue from matings in two or more consecutive generations with very low or no ability, when there would be a reversal of the process, and the production of an increasing number of children having low or no ability. We have here, then, segregation, a real alternative inheritance; but the segregation is that of units of progressively higher potency.

The limits to the development of this trait would naturally be set by the grade of the ability in the general population. Mating of a high or medium with a low grade would insure the production of an increasing number with high or medium ability and the final elimination of those having low or no ability. This process is amply illustrated in Lines A and C.

A word may be added here regarding the origin of strains showing unusual calculating ability. In rare instances, individuals have shown this faculty in an abnormal state of development. The writer has recently met a man whose business it is to calculate the invoices for the large mercantile houses of his city. He is able to invoice the charges covering a period of 6 months in 40 hours, the totals involved amounting to hundreds of thousands of dollars. For the purpose of calculation he uses a piece of paper 2 x 3 inches. His accuracy, as determined by actual test, is equal to that of a calculating machine and his speed 20 per cent greater. Both of his parents were from strains showing superior native ability in calculation. The distribution of this ability in his fraternity is as follows: two members show very high ability, three members medium, three members low ability, though in this case the low ability is considerably in advance of the calculating ability in the general population. Here, again, there has evidently been segregation of two unit-like series of high potency, the two who show the highest ability having been produced by the double presence of two highly potent series, one contributed by the maternal, the other by the paternal germ-plasm.

2. Aggressiveness.

The application of the term aggressiveness has been given in the opening sections, with a sufficient number of illustrations in the histories that follow to make its meaning clear.

In evaluating such a trait or trait-complex as aggressiveness we are confronted by enormous difficulties. The social inheritance plays a far larger part in its manifestation than it does in calculating ability,

where it is possible to determine with fair accuracy the training received and where it is well known that the individual will stop short at definite stages of achievement, no matter what are his advantages in the matter of formal instruction.

While it is possible by studying the individual from many sides to form a judgment as to his rating with reference to this trait, the difficulty is greatly enhanced when he belongs to a generation that is past. It should be remembered that the environment for most of the persons concerned has remained comparatively simple and uniform. Furthermore, the trait has been evaluated in relation to other elements of his makeup, as well as the chief influences in his surroundings.

While, therefore, the classes could not be made with the same degree of definiteness as for calculating ability, still it is believed that the familiarity with the material was sufficient for classification into three grades—a low, a medium, and a high degree of aggressiveness. If we conceive the different degrees of this trait to be due to comparative presence (A) or absence (a) of determiners from the germ-plasm, we may contrive a distribution of grades of the trait for the offspring according to Mendel's law. This distribution would be the same as that already given for calculating ability in the preceding section. The produce of 80 matings, numbering 282 individuals, was classified and compared with the theoretical expectations. The results are given in table 3.

TABLE 3.—*Aggressiveness. 80 matings, 282 individuals.*

Matings	(1) L and L			(2) L and M			(3) L and H			(4) M and M			(5) M and H			(6) H and H		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Expected....	100	....	....	50	50	....	....	100	....	25	50	25	....	50	50	....	....	100
Realized.....	88^{3}	11^{2}	....	51^{6}	46	2^{4}	30^{3}	60^{6}	9^{1}	17^{6}	75^{9}	6^{5}	3^{2}	47^{4}	49^{4}	....	25	75

Here, again, the realized percentages would indicate a segregation of the elements of the trait. The considerable discrepancy between the expected and the realized results in matings (3) and (4) is no doubt due to varying environmental influences and the difficulty of evaluating the various grades of the trait. It will be observed that this discrepancy is considerable only where both parents are moderately aggressive, or where one has a very low grade while the other has a very high grade of the trait. In both of these cases the offspring show greater resemblance to the parents than would be expected from the formula. This is probably to be explained by the effect of parental example.

3. Perseverance

In dealing with the characteristic perseverance, we are well aware of the great difficulty of defining its heritable elements. The persistence with which anyone follows a line of activity is due mainly to his capacity for forming habits and his dominating interests, and these, although in the first instance generally innate, are affected by all sorts of extraneous influences. Such native qualities as general health, endurance, pride, independence, and obstinacy also have a rôle in its manifestation. Still, it is known that children in their desultory activities present very noticeable differences with regard to this characteristic; while imbeciles, who are incapable of conceiving ideals or a chain of related purposes, may show a variety of grades of this trait quite independent of their mental incapacity. Perseverance may accordingly be looked upon as a trait-complex having heritable elements whose behavior may be profitably investigated.

The progeny of 80 matings, numbering 269 individuals, was classified and the results compared with the theoretical expectation. This comparison is shown in table 4.

Table 4.—*Perseverance. 80 matings, 269 individuals.*

Matings	L and L			L and M			L and H			M and M			M and H			H and H		
	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Expected....	100	....	....	50	50	....	....	100	....	25	50	25	....	50	50	....	....	100
Realized.....	96^{8}	3^{2}	....	55^{7}	44^{3}	....	13^{8}	65^{5}	20^{7}	12^{8}	82	5^{2}	5^{5}	61^{8}	32^{7}	....	....	100

Here, again, there is some discrepancy between the actual and theoretical results which may well be set down to exogenous factors. Making due allowance for these exogenous factors, the conclusion seems warranted that there is a heritable element in the trait-complex called perseverance, which so far dominates it as to make it show segregation.

It is, then, to the segregation of determiners for these traits that we may conceive the wide range of their manifestation to be due. On the constructive side this principle has its chief importance in the possibility it offers for the building up of the trait-complex from the effective combination of different traits through matings of successive generations. With proper selection these combinations may be so many steps in the production of high native ability, or the evolution of a line showing average ability superior to that of earlier generations.

Our history furnishes many examples of both of these results, and it will suffice here to refer once more to certain cases. An interesting illustration of such a series of combinations is afforded by Line A,

where aggressiveness, perseverance, calculating ability, and, finally, unusual mechanical ability all converge toward their presence in VI–20. Another significant series of combinations occurs in Line C, whereby defects concentrate in a single member in the third and fourth generations, the latter (IV–81) dying without issue, while the combination of medium or high aggressiveness and perseverance with calculating and other mental abilities produces good average efficiency of various types in the representatives of later generations.

Should this principle of segregation prove capable of further extension in the domain of mental and temperamental traits, it will provide a means of more accurate prediction as to the outcome of given matings and the trend of development in particular strains. Such extension should prove highly valuable for the evolution of a constructive eugenics.

The theoretical bearings of these results are more far-reaching than would at first appear. From this study and others the writer is convinced that it is by such quantitative ratings of inherent traits that we shall be able to make a more minute analysis of the personality than has hitherto been attempted. With such quantitative ratings and the principle of segregation as illustrated in this network, we ought to be able to trace the factors contributory to many cases of sporadic feeble-mindedness and the occurrence of unexpected immoral and insane tendencies in persons springing from fair stock. In this way much might be accomplished without the highly desirable objective tests that the modern applications of psychology are promising. Indeed, there is no reason why this detailed analysis should not accompany and in many cases point the way to essential refinements of method now being attempted in the service of vocational guidance.

XIV. STATISTICS.

1. The Population Considered.

The total number of individuals considered in the investigation is 1,822. The number appearing on the two charts and including the direct descendants of the Rufers and Riels, their consorts, and in a few cases the product of other matings of these consorts, is 912. The remainder, numbering 910, have been studied in connection with the strains into which out-marriages have occurred.

2. Comparative Efficiency of the Several Lines.

In the foregoing description we have dwelt on differences in the social efficiency of the several lines. These differences may be summarized in the following manner: Confining our attention to the direct lines of descent, we have tabulated, first, the proportion of the socially fit to the socially unfit in successive generations. These classes are necessarily only roughly delimited, regard having been paid to the totality of the relationships sustained by the individual to his family and the community at large. If it is known that he received occasional help from relatives, but in general was able to "pull his own weight," he is classed with the socially fit. If he was often the recipient of public or private aid for the care of himself or his family, or if he was clearly an institutional case but held his place in the family and the community through the forbearance of relatives and friends, he is classed with the socially unfit. The classes also exclude those who died before their mental condition could be determined or who are still too young for determination.

Figure 1 shows the proportion of socially fit to the socially unfit of successive generations in the five lines of the Rufer network. The proportion of the socially fit is represented by the part of the square left blank; the unfit by the heavily shaded portion. It has been thought best, in several instances where the individual was on the border-line of efficiency, to make a third class represented by the lightly shaded areas.

This scheme illustrates strikingly the concentration of social efficiency in Lines A, B, and C, while the inefficiency has concentrated in Lines D and E. Furthermore, the small proportion of the socially inefficient suffers a decrease in the three superior Lines. In Line A it is 2 to 15 in the third generation, as against 1 to 38 in the fourth, and 2 to 61 in the fifth generation. It is interesting to note that this slight persistence of defect is due to the marriage of one defective in generation 4 to a defective member of Line D.

In Line B, members of all generations following the first are socially fit, while in Line C there are in the third generation 14 socially fit

individuals to 1 who is socially unfit and 1 on the border-line of fitness, whereas in the following generation all, that is a total of 47, are socially efficient. In Line D, the proportion of the socially unfit rises from being roughly one-half in generations 2 and 3, it becomes two-thirds in the two following generations. A census of the latest generation, 10 years hence, will undoubtedly further increase this ratio, since many of the markedly deficient couples are still reproducing, and most of their children, though apparently defective, are at present too young for accurate determination and representation in the figure.

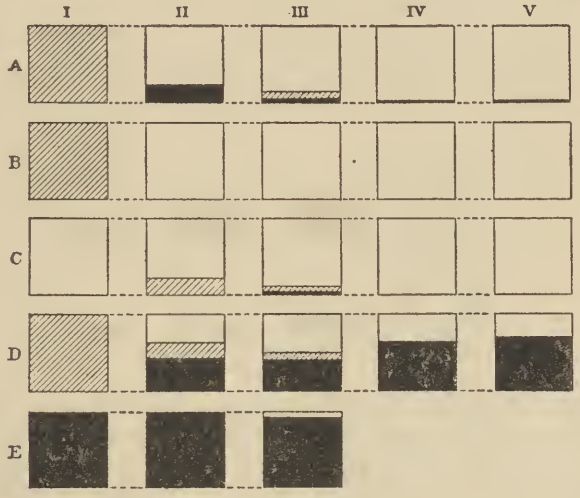


FIG. 1.

Here the type of unfitness, too, shows considerable range, including vagrancy and petty criminality, sexual immorality, and in a few instances, alcoholism and imbecility. In Line E, on the contrary, there is the constant presence of social unfitness, generally in the form of imbecility, amounting to 100 per cent. The significance of these ratios will be further discussed in the section on marriage selection.

In the same way, the ratio of the socially fit to the socially unfit in successive generations of Lines F and G have been calculated and represented graphically in figure 2. We find here a similar decrease in the proportions of the socially unfit, as we proceed from the earlier to the later generations. This decrease is less marked for Line F than for Line G, and in the former case has taken place by the failure of many of its deficient members (men) to secure life partners. It should be observed that in Line G the large proportion of the socially fit in generations 3 and 4 is reached by the inclusion of many dull and backward individuals. They are not aggressive and have not moved far from the original home of the family; many of them did not advance far at school, but they possess great vitality and a dogged

perseverance which enables them to maintain themselves as farmers and mechanics, even though many of them do not reach the average standard of living in their respective communities. They are socially fit as judged by their ability to perform the duties of the station in life to which they are born.

Many of the socially unfit in Line F had been inmates of county homes or of State institutions for long periods of time. It has been difficult to arrive at the exact total of such public charges in this fraternity, since certain earlier records are incomplete, but the comparison of these records with the accounts of reliable informants gives the following estimate of the cost to the State of this line alone: In the second generation there were at least 6 who were at the county home for periods aggregating from 10 to 18 years; they cost the county and

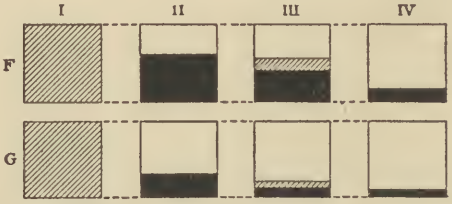


Fig. 2.

State approximately $17,600 (estimating the cost of maintenance at $200 per year). Four of these six married, and left in the two succeeding generations 27 descendants, 18 of whom have been maintained at county or State expense; some of them for periods as long as 20 or 30 years. The total expense of their maintenance for an aggregate of 165 years is estimated at $33,000. So we may say that our charitable organizations not only cared for these defectives, but, through the type of care which they gave, generously allowed them to propagate their kind and thus provide for double the expenditure on their account in the two ensuing generations.

3. Comparative Fecundity.

It is often maintained that the increase of the socially inadequate is largely due to the relatively larger families of the defective and degenerate as compared with those of the socially adequate classes. Our data have been analyzed with reference to the fecundity of the several lines and the results shown in table 5. The capital letters stand for the several lines, and the Roman numerals at the left for the generations. The figures represent the average number of children per mating. The table shows that there is a noticeable drop in fecundity in later generations of all lines. This decrease, however, is no more striking for the socially efficient lines A, B, C, G, than for the defective and degenerate Lines D, E, F.

Table 5.

	A	B	C	D	E	F	G
I.....	6	1	5	5	4	21	10
II.....	4.5	4	3.2	5.25	4.5	3.75	6.571
III.....	3	4.25	4.166	2.828	2	2.192	2.786
IV.....	2.536	[1]2.3	[1]1.323	2.266	.....	.....	.....

[1]Still reproducing.

4. Comparative Survival.

The increase in the defective classes due to their high fecundity is generally counterbalanced, it is said, by the relatively high infant and child mortality of this class. The analysis of our data lends some support to this view. The proportion of those surviving to the age of 20 in each generation was determined for the Lines A, C, D, E. This was done by calculating the average number surviving and dividing this by the average number born for the same generation and line. Table 6 gives the corresponding survivals for the average number of births shown in table 5 while table 7 gives a comparison of survival ratios obtained in each case.

Table 6.

	A	C	D	E
I.....	4	5	5	3
II.....	3.5	2.6	5	2.5
III.....	2.46	3.666	1.818	.....

Table 7.

	A	C	D	E
I.....	0.6666	1.00	1.00	0.75
II.....	.7777	.812	.952	.555
III.....	.82	.877	.643	.....

The survival ratios for successive generations increase in the socially efficient Lines A, C, while they show marked decrease in the defective Lines D, E. The small survival ratio of the defective lines taken in conjunction with the low birth-rate is illustrative of Nature's method of eliminating the unfit. Since these communities lack many of the agencies which nowadays bolster up the inadequate, it is probable that this method is in more effective operation here than among the defective and delinquent classes of other social groups.

5. Differential Migration.

The behavior of the five lines of the Rufer network with regard to their migration to another section of the State or country may next be considered. Taking A, B, C together, that is, the lines which show a decreasing proportion of socially unfit, we find only 3 of the whole number at the original place of settlement of the family; 42 are settled within a radius of 15 miles of this place, while the remainder, numbering nearly 200, are widely scattered, many having migrated as far as North Dakota, Idaho, Alberta, and California.

Turning now to D, E, those lines showing an increasing proportion of the socially inadequate, we find that exactly the opposite is taking

place. Only 3 of all the representatives of these lines are known to have migrated beyond northeastern Ohio; 16 are scattered through towns which are from 50 to 80 miles distant, while the rest are at the original place of settlement or in nearby villages.

This difference in the rate of migration is a fact of great importance. Because of it the mentally able, more aggressive, and persevering members are more apt to meet and mate with their kind, while the less efficient are left behind to mate with their kind; a process which naturally leads to intensification of initial differences in the various branches of a family. This point will receive further consideration in the section on marriage selection.

Differential migration is of further importance when taken in connection with the burden of support and the many other problems entailed by the defective and degenerate classes. Line D, as we have seen, furnishes only one institutional case, though many of its members have been and still are recipients of county aid. Its chief menace consists in the spread of disease by its immoral women and its general undermining of the economic and moral life of the community. In Line E all of the survivors of generation 3 but one are institutional cases. They aggregate a total of 86 years of care on the part of the State. Estimating the cost of maintenance at $200 per year, we have $17,200 as the price which the State has had to pay to date for the generous provision made by the community for the care of a feeble-minded girl two generations ago.

Thus, by far the greater number of the socially fit members of this network have moved out into new sections of the country, and there, under more severe conditions, are developing its resources, adding to its wealth, and as progressive citizens contributing to its educational growth. The socially unfit, on the other hand, have been left behind to become a hindrance to the moral and economic development, a burden on a charitable public, or to be wholly supported at the State's expense.

Do we not see here in actual operation the factors which are making the care of these defectives an almost intolerable burden to the Eastern States, and have brought about such differences in the rate of development of different sections of our country? It is largely due to differential migration that, in such a State as Kansas, there should be, in a total of 105 counties, 54 without any feeble-minded, 96 without any inebriates, 38 without poor-houses, 65 without any convicts in State's prison, and dozens in which no jury has been called on to try a criminal case in 10 years; while in Wisconsin, another State which offered rigorous conditions to the pioneer and was correspondingly unattractive to the lazy and nonaggressive, there should have been within half a century an economic and educational development considered worthy of emulation by the older States of the Union.

XV. RELATIVE EFFECT OF ENVIRONMENT AND THE BLOOD.

Those who attach a relatively greater influence to environment than to inherent traits may argue that the increased efficiency of the better lines has been due to improvement in external conditions rather than improvement in the innate qualities. While there can be little question that increase of opportunity in a more favorable environment has been a factor here, its chief value seems to lie in the wider range it has offered for marriage selection. In the great majority of instances those who moved away from the homestead carried little capital with them other than their willingness and ability to work.

The 400 acres originally owned by Aaron Rufer proved to be among the most fertile in the county; only 50 acres of this tract went to his ablest son; the greater part was bequeathed to his more inefficient children, who thus had a good economic start of which they were not able to take advantage. Succeeding generations have seen these holdings sold off bit by bit to their more enterprising neighbors, until the total number of acres now in the possession of the Rufers is 47.5, and these are lying idle or so badly tilled that they yield practically nothing.

Three families, who make their home here, live in circumstances which would have shamed pioneer standards of a century ago. The men are occasionally taken as farm-hands or to do odd jobs in the village. The women work sometimes by the day for their more prosperous neighbors, who put up with their slackness and inefficiency and usually overpay them. They would all have starved to death years ago but for this charity, helped out as it is by the profits of clandestine prostitution and the friendly county aid. In no sense do these people suffer social ostracism. They attend the village school and are welcomed in the religious and social gatherings of the parish church. They are in and out of the houses of the better families in the section, who in the main seem ready to give them every advantage which they themselves enjoy, except to marry them.

Their degeneracy can not be traced to the untoward conditions of a congested city life or to the isolation of a backwoods existence. For a century they have been sharers in the ideals and opportunities of relatively progressive people. Their degeneracy and defect can be looked upon as nothing else than as the cumulative result of the mating of defect with the defects of other bad strains.

Even in the improved environment of the better lines, whenever marriage of the inefficient takes place with defective members of the inferior lines or other bad stock, there is a decided drop in ability and efficiency. This is well illustrated in Line A. IV–7, who was decent, a fair housekeeper, though devoid of foresight, had by IV–6 a daughter

who was brought up in the same environment as the children of IV–10. She was slow, with slight ability to advance at school. Has married an ignorant, alcoholic, shiftless member of Line D, and is now sexually immoral, alcoholic, giving no care whatever to her home or children. Another illustration is furnished by IV–114, belonging to a better branch of Line D. Her father was a quick-witted industrious Irishman; her mother a scheming, sharp-tongued woman, though the ablest daughter of II–11. She (IV–114) was the dullest of her fraternity, with little foresight or ability to calculate. She married a shiftless, irresponsible, alcoholic man of feeble-minded stock. Of her twelve children who reached maturity, only four made fair progress in school and can now be rated as decent, self-respecting citizens.

While there has been little interference in the trend of affairs on the part of societies for the care of neglected children, a great many of the members of these networks have been taken into good families and given an opportunity of developing any capabilities they might possess. These cases will now be considered and an attempt made to gage the effect of superior opportunity on their inherent qualities.

Case 1 (IV–9, Chart B).—He is the son of III–34, Chart B, who belongs to a family having many capable and respectable members. III–34 suffered from some obscure brain disease as a child; grew very slowly; was unable to learn anything at school, and later earned a scant livelihood by the crudest labor. From his marriage to a violent, shiftless sex-offender of bad stock this son (IV–9) was born. His mother eloped soon afterwards, and he was taken by his father to an unmarried sister who maintained a comfortable home by dressmaking, and is a woman of good ideals, active in church and social circles of her town. He was always incorrigible; bent on all sorts of mischief; stole, lied, and refused to learn anything useful. Later was given good influences in the home of IV–1, Line A. He has persisted all his life in a malicious, irresponsible existence, clearly a case of impotence to respond to any of the good influences of the environments.

Case 2 (V–192, Chart A).—She was the second daughter of an immoral woman belonging to Line D, who had no sense of number and was not able to give her children proper care. Her father was lazy, shiftless, with little judgment and large conceit. She was given a comfortable home, taught housekeeping, and sent to school regularly, where she made little progress. Had an illegitimate child and later married another man. Her home presents the extreme of filth and disorder; her children are ragged and uncared-for.

Case 3 (V–198).—The younger sister of V–192. Was taken into the home of IV–95, who, though lacking in sense of number, is civil, chaste, self-respecting. She never learned anything at school; was always a brazen, evil-tongued girl. After her marriage neglected her family to run after the "Hunkeys" and Italians, and now has left her husband to live with another man of bad family.

Case 4 (V–56, Chart A).—She was the daughter of a shiftless, sexually immoral man of low mentality. Mother belonged to a good family of good mentality; her marriage, however, was a forced one. The daughter went as a young girl to another State, first as servant in a family of considerable means and culture. She gave up for the most part association with her family.

She later married a son of her employers, and although externally her home approaches the standards of her adopted people, she has by no means attained their worth in the qualities of truthfulness and fidelity.

Case 5 (V–2, Chart B).—The daughter of a feeble-minded, immoral woman of Line F. Her father belonged to a family showing criminality and gross sexual immorality, and he deserted her mother before V–2 was born. She spent the first 9 years of her life at the county home, then was taken by a family in good circumstances to a distant city, losing all connection with her own relatives. Was kept in school until she was 16 and given training in housekeeping; also had good church and social influences. Was always incorrigible, incapable of habits of neatness and industry, and proficient in no work she undertook. Is now a slattern, alternating between listlessness and fits of temper, who allows her family of ten to grow up as they will. Nothing worse could be imagined than the state of her home or the haphazard way in which her family meet questions of food and clothing day by day. Her half-sister, whom she has not known since they were in the county home and who was brought up in far less favorable conditions, is very like her.

Case 6 (IV–92, Chart B).—In contrast with the foregoing we may take the son of the violent, sexually immoral III–43, who, however, had great vitality and fine physique. He has always been attributed to a man whose family were intelligent, with good business sense. He roamed about with his mother after her separation from her second husband, was half-starved and made familiar with scenes of gross immorality. Never went to school, so that at 11 he was not able to write his name. His appeal at this time to a family of considerable means and intelligence was met by an opportunity to work his own way with them. Though very dull in figures, he managed to secure a high-school education, and is now a trusted, efficient employee in the firm of his foster-parents. Is a fine specimen of physical manhood, strictly moral, has a taste for good reading, and maintains a home which shows many evidences of refinement. Here it would seem as if the better tendencies of the father's side had asserted themselves in the face of the most adverse environmental conditions.

It would therefore appear that the superior traits of the better endowed individuals largely sought or made the wider opportunity, while the inherent weaknesses of the inferior ones have not been overcome by the advantages they may have had.

In some cases it would even seem as if the greater the social and economic opportunity, the greater the disposition to settle back and let someone else assume the burden of their maintenance. The low efficiency is primarily due not to lack of opportunity, but to a native inability to react favorably to social and economic environments.

XVI. MARRIAGE SELECTION.

Our conclusions concerning the effect of selective matings have been indicated in the preceding sections. This will accordingly consist largely of a presentation of views as to certain factors conditioning such selection.

At the risk of wearying the reader, we wish before considering these to recapitulate once more the effects of selective mating. All members carry weaknesses; where these are relatively few or so slight as not to seriously impair their efficiency, the chance of their marrying strength in these traits is relatively great. In most instances a partner was secured who supplied a higher grade of the trait or other valuable characters. The trait is thus strengthened or the defect made good, and does not again make its appearance unless there is subsequent marriage into a strain having the same weakness or defect. In the histories under consideration this has occurred in only a few cases, so that the grosser defects have been practically blotted out from three lines of this network. On the other hand, when defect has been marked or a number of minor weaknesses has occurred in such combination as to entail social inadequacy, mating has usually occurred with those equally defective. Where these defects were similar, the result has been a fairly uniform type of inefficiency. Where the defects were dissimilar, the result was a diversity of degenerate condition. We may now inquire, What were the essential factors involved in these matings? We will study these factors in the Rufer network, where the most marked diversity occurs and where our data are more complete.

There were several agencies at work here which resulted in the separation of those members of the family showing superior mentality and aggressiveness from their less fortunate brothers and sisters. The factor determining the better mating has generally lain in the superior endowment of the one who migrates. An example of this occurs in Line C, whose founder secured an able, aggressive wife. Subsequent removal of the couple to a part of the State where the family was not known enabled their children to secure abler consorts, which, for at least three members, meant marriage into better strains. In the second generation of Line A, the cause which led to the separation of the superior from the inferior members of the fraternity, was in the first instance the death of the father and the scattering of the children among strangers. Later, the desire for better advantages led the superior brother and sister to a different section of the State, where they made better marriages than the two who remained behind. Later generations of both branches have seen a repetition of this process with further deviation from the inferior lines. Thus it was the superior qualities which led to a new environment. This new environment meant enlarged opportunity, one of whose chief values lay in

the wider range it afforded for marriage selection. To appreciate its full significance, we have only to turn to the conditions which obtain with the inferior lines in the two communities where are concentrated most of the defective and degenerate members of Lines D and E. Here a definite social stigma attaches to the name Rufer. The course of inquiry has more than once elicited the comment, "There is something wrong with anyone who will marry into that family; its history is so bad and it appears to be getting worse."

There have thus been well-defined eugenic conceptions operating here to limit selection and give direction to the evolution of the inferior lines. The few able and aggressive members feeling this stigma deliberately get out and seek settlement where their family is not so unfavorably known. This leaves the inert and inefficient behind to found a marriage on momentary impulse, or put up with anyone they can get, which, in nearly every instance, is a consort equally defective. A striking illustration of this is furnished by III–38, Line D, who, after living some years in the West, returned for a time to his birthplace. He was greatly superior to the other members of his fraternity. He became discouraged in his attempts to secure a wife and a place in the esteem of his fellow-townsmen. He is reported as saying: "Here I am only a damned Rufer; I will go back West, where I am as good as anybody." He did so, made a good marriage, now has a promising son, and is a man of means and influence. His feeble-minded brother, on the contrary, although he consorted with several bad women, remained unappropriated until recently, when at 56 he has made a marriage with an erratic, profligate harlot, whose chief intent is to secure a protection against the effects of her sexual laxity.

Without attempting to give consideration to other factors which necessarily enter into the selection of mates, we may safely say that the possession of such traits as aggressiveness and perseverance has, in one way or another, resulted in a greater range, and consequently a better type, of marriage selection. In most cases the superior endowment operated to secure removal from sections where the stigma attached to the family name prevented the selection of desirable mates. That done, it insured a fair livelihood and commanded the respect of the adopted community, and directly secured a better consort. Often, too, those with superior traits actively sought alliance with better families. This condition, in a state of society where all must earn their living, again meant superior efficiency of the family and strain selected, and subsequent advance in the combination of traits carried by the offspring.

While these positive factors have operated to increase the range of selection for the better endowed, and have resulted in the improve-

ment of the line, the limitations to selection imposed by the undesirability of the unfit as life partners, supplemented by "fear of the blood," have promoted the mating of the same or of different types of unfitness, and have resulted in the persistence and diversification of the original defects.

Our history furnishes several instances where the undesirableness of the defective as a consort was offset by the possession of a small patrimony; but here again the partner selected by designing outside parties was very deficient mentally, or a gross sex-offender. Since it is the policy of some charitable societies to encourage the marriage of sex-offenders, its frightful results, as illustrated in these histories, can not be too sharply stressed.

Accordingly we may summarize as follows: Marriage selection as determined largely by the innate qualities of the individual has, by the convergence of the innate qualities of the various strains, operated in some lines to dissipate defects and to introduce traits which make for increased social efficiency, and to concentrate defect and degeneracy in other lines.

XVII. IMMIGRATION.

Manifestly no sweeping generalization in regard to immigration restriction can be made from the study of so small a group, but its investigation furnishes at least concrete instances in support or refutation of statements often heard in discussions of the immigration problem. It further affords an illustration of the difficulty of framing a restrictive law solely on the basis of race, physical fitness, literacy, and mentality of the individual apart from his family.

It is maintained that the races of the present incoming hordes are not susceptible of amalgamation and assimilation as were those of a half century ago. Touching this question of race, we may call attention to the following points: In the first place, the defectives of this history all belonged to the races against whom there has never been a wish to discriminate in restrictive legislation—the English, Irish, and German races—those peoples who have assimilated so successfully to the American type and at the same time contributed so many valuable characters to our national life.

The ardent advocates of unrestricted immigration exclaim: "Never mind about the parents; they will soon be dead. Their children will become good Americans." In the present instance the conditions for realizing this highly desirable end, that is the making of "good Americans" were eminently favorable,—there was a very generous provision for acquiring land, and the planting of the family in a progressive pioneer community, where democratic ideals prevailed and facilities for education were fair. All these should have made amalgamation, assimilation, and economic independence a relatively easy matter. Notwithstanding these favorable and fairly uniform conditions, we find this family breaking up into widely diverse conditions.

Let us consider briefly how far they have achieved the state so desirable for our immigrant population. There has been much intermarriage of all lines with native and immigrant stocks which has resulted in complete amalgamation. The significant fact, however, is that here the process has consisted in the gravitation of members carrying defects, to defective members of native and incoming degenerate strains, with the appearance in later generations of manifold defects, while the superior members have been accepted as partners by the better native strains. The vital point here would seem to be, not whether there has been amalgamation in a general sense, but what sort of amalgamation has resulted. Heredity studies are showing wide diversity in our native stocks, and it is a significant fact that, with incoming strains, those of low potentiality inevitably amalgamate with the lowest elements of our native population, while those of high potentiality amalgamate with the better elements.

A similar condition obtains with reference to assimilation. In the progressive lines it has consisted in the ready adoption of the ideals and standards of living of the better lines into which they have married. In the defective lines there has been a similar adherence to the lower ideals and standards of the degenerate native strains, and a decline in these standards in subsequent generations.

We frequently hear the statement that pauperism among immigrants disappears in the second generation. In our history pauperism does not appear at all until the second or third generation and only in certain lines. It then increases in ensuing generations. It appears to have its source, not in the strange, adverse conditions with which the immigrant naturally finds it difficult to cope, but in a native inability to take advantage of even favorable conditions. This inability, as we have already seen, is traceable to the mating of defective with defective. Our study accordingly lends support to a view which will no doubt prove to be very generally true as eugenic surveys are extended. According to this view, low economic worth is largely a matter of inherent mental defect, while mental defectiveness is not so much a question of race as it is a question of defective strains within that race. Every race has its good and its bad strains. Some no doubt have more of one kind than of another, but any selection of immigrants as the progenitors of the future American race, in order to be effective, should be based on the salient traits of the strains rather than the race to which the individual immigrant belongs.

If, now, we inquire how far the initial defects found here might have been detected by any of the tests proposed for the sifting of the fit from the unfit, we secure evidence of the inadequacy of these tests in determining the potentialities of the persons concerned. The earlier generations of the Riel and Rode families were noted for their great stature and fine physique, this advantage being accompanied by dullness and mental backwardness, which, however, in no case appears to have amounted to obvious mental defect. At worst they seem to have belonged to a high grade of feeble-mindedness, which is so difficult of detection and hence rarely deported, but which by its marriage into inferior native strains founded lines noticeable for marked defect.

In the case of Aaron and Mary Rufer, both were short and stocky and very strong. Current mental tests would assuredly have brought to light the wife's defect of number and proportion, but here expulsion would have meant that of her husband, who represented the aggressiveness, perseverance, and superior mentality of a strain which went far to counteract the weakness of the wife's strain. The whole question is exceedingly complex.

It is evident that such purification of the incoming strains of their most undesirable elements as effected by present methods goes far as a eugenic measure, but it seems clear, too, that to have the sifting-out process attempted at the ports of entry thoroughly effective, it will need to be supplemented by studies both here and abroad. Studies abroad in order to prevent the transplanting of notoriously defective strains, and studies here which shall secure the location and registration of those that threaten to become increasingly unfit. Such registration could then be followed by appropriate action on the part of the State to prevent their further propagation.

XVIII. CONCLUSION.

Finally, we may indicate certain bearings of the results of our study on the present-day program for race betterment. We have looked upon the course of development of the various lines considered here as a vast experiment in selective mating. In this process the better elements, though sometimes weak with respect to certain traits, have generally, through their own reaction to social and economic conditions, been brought together. Advantageous combinations thus effected have resulted in marked advance in economic worth. The worse elements, those weak or lacking with reference to many socially efficient traits, have, through their failure to effect matings with strength, persisted in their original defects and diversified their original weakness, and so sunk lower and lower in the scale of social fitness.

As we survey the whole course of our national history, the view appears tenable that it is by similar convergence of lines in a process reaching far back into colonial and old-world history that great strains have arisen noted on the one hand for original enterprise and moral worth, and on the other hand for dependency and moral unworthiness. The questions may well arise here: How far is the control of matings practicable or desirable with regard to the evolution of such strains? Can the evolution of the former class be safely left to the natural preference of the healthy, energetic, and able to mate with their own kind? Since the worst strains seem powerless to effect improvement, and even with natural checks on their multiplication are becoming too great a burden on society, what means should be adopted for their elimination?

Let us consider two of the more important eugenic measures that have been advocated in relation to the conditions set forth in this history. Such measures fall into five main classes: first, segregation and even sterilization of the grossly defective; second, state control of marriages through the operation of an eugenics board; third, Federal control of immigration; fourth, creation of an enlightened public sentiment in favor of eugenic matings; fifth, eugenic education of prospective marriage mates.

So far as these families are concerned, the activity of public-spirited citizens has already resulted in the segregation of the living representatives of child-bearing age belonging to an entire imbecile line. In the light of our histories this action is amply justified. But what of the numerous defectives and degenerates of the other two socially unfit lines? As already pointed out, only one of them is at present receiving institutional care. The great majority lead a parasitic existence at the expense of the community and are thus a drag on any economic progress, while their menace to the moral growth of the social group is unquestionable.

The most serious aspect of the problem at present is their rapid multiplication. In Line D alone there are in the latest generations 5 feeble-minded women and 5 very defective men, 2 of whom are markedly alcoholic. All have consorts who are noticeably lacking in socially effective traits, and are reproducing at a rate which threatens more serious problems in another decade. Many of these people deserve permanent custodial care, but since a further survey will no doubt reveal many communities of the same type, whose segregation would mean too great a burden for the state, there would seem to be scope for some colonization scheme, such as New Jersey and New York have adopted in some cases. Such colonies could be made largely self-supporting. Their members would do a fair amount of work under supervision, whereas they remain idle when left to their own initiative, with the possibility of help, voluntary or otherwise, from their neighbors. Supervision in a State colony would counteract many of the evils for which these people are responsible at present. To anyone having close acquaintance with a community of this kind, the necessity for external compulsion in checking reproduction is clear and imperative. There is here no possibility of developing a sense of responsibility to the coming generation, and hence no check to be imposed but artificial ones.

Where representatives of such degenerate strains become members of industrial communities, investigation and supervision by the social welfare bureaus of industrial plants afford a step in the solution of these problems. But is there not likelihood that this social work, unless accompanied by some form of birth control, will result in an ever-increasing proportion of those needing such supervision? Agencies of social amelioration in themselves are not effective as eugenic measures. So far as they controvert natural agencies for the selection of fit strains, they need to be accompanied by conscious selection of fit strains, or verily our "last state shall be worse than our first."

A first-hand acquaintance with conditions forces this further conclusion upon us: There is small probability that a law, such as some States have passed, involving voluntary confession of unfitness and with no penalty for violation or falsification, will go far to prevent marriage among these socially inadequate classes. Public sentiment has been active against their marriage for generations past. It was active quite recently against the marriage of a feeble-minded man of Line D and an immoral epileptic girl of bad stock, but the marriage took place in spite of all opposition. The chief trouble here is the absence of authority. "We all want the marriage stopped, but to whom shall we appeal?" is the general complaint when such matings are in prospect.

This brings us to the second eugenic measure—state control of marriages through a State eugenics board with authority to investigate the

end and course of hereditary defects and prohibit certain unions under penalty. Only a board served by a corps of workers having scientific training sufficient to evaluate hereditary potentialities, and empowered to cooperate with boards of other States, could pronounce authoritative judgments and undertake the investigations necessary in a fluctuating population. But before we can arrive at the principles essential to rational mating, we must traverse further the path of painstaking investigation. This offers a fine field for research on the part of college and university classes in eugenics, as well as for the efforts of those having an interest in genealogy. No more instructive and fascinating study can be conceived than the tracing of special ability or high native talents to their beginnings. The valuable data thus collected should, however, be correlated by some central agency in order to be used in the further elaboration of eugenic principles.

REFERENCES.

1. Bagley, W. C. 1906. The Educative Process. New York: The MacMillan Co.
2. Castle, W. E. 1913. Heredity in relation to Evolution and Breeding. New York: D. Appleton and Co.
3. Davenport, C. B. 1911. Heredity in relation to Eugenics. New York: Henry Holt and Co.
4. Goddard, H. H. 1912. The Kallikak Family: A Study in the Heredity of Feeble-Mindedness. New York: The MacMillan Co.
5. Danielson, F. H., and C. B. Davenport. 1912. The Hill Folk: Report on a Rural Community of Hereditary Defectives. Memo. No. 1, Eugenics Record Office.
6. Estabrook, A. H., and C. B. Davenport. 1912. The Nam Family: A Study in Cacogenics. Memo. No. 2, Eugenics Record Office.
7. Bulletins Nos. 1 to 10, Eugenics Record Office.
8. Salmon, Thomas W. 1913. Immigration and the Mixture of Races in relation to the Mental Health of the Nation in Modern Treatment of Nervous and Mental Diseases. Edited by White and Jellife. Phila. and New York: Lea and Febiger.
9. Winship, A. E. 1906. Jukes-Edwards. R. L. Myer and Co., Harrisburg, Pa.
10. Rosanoff, A. J. Dissimilar Heredity in Mental Disease. American Journal of Insanity, vol. lxx, No. 1.

CHART A

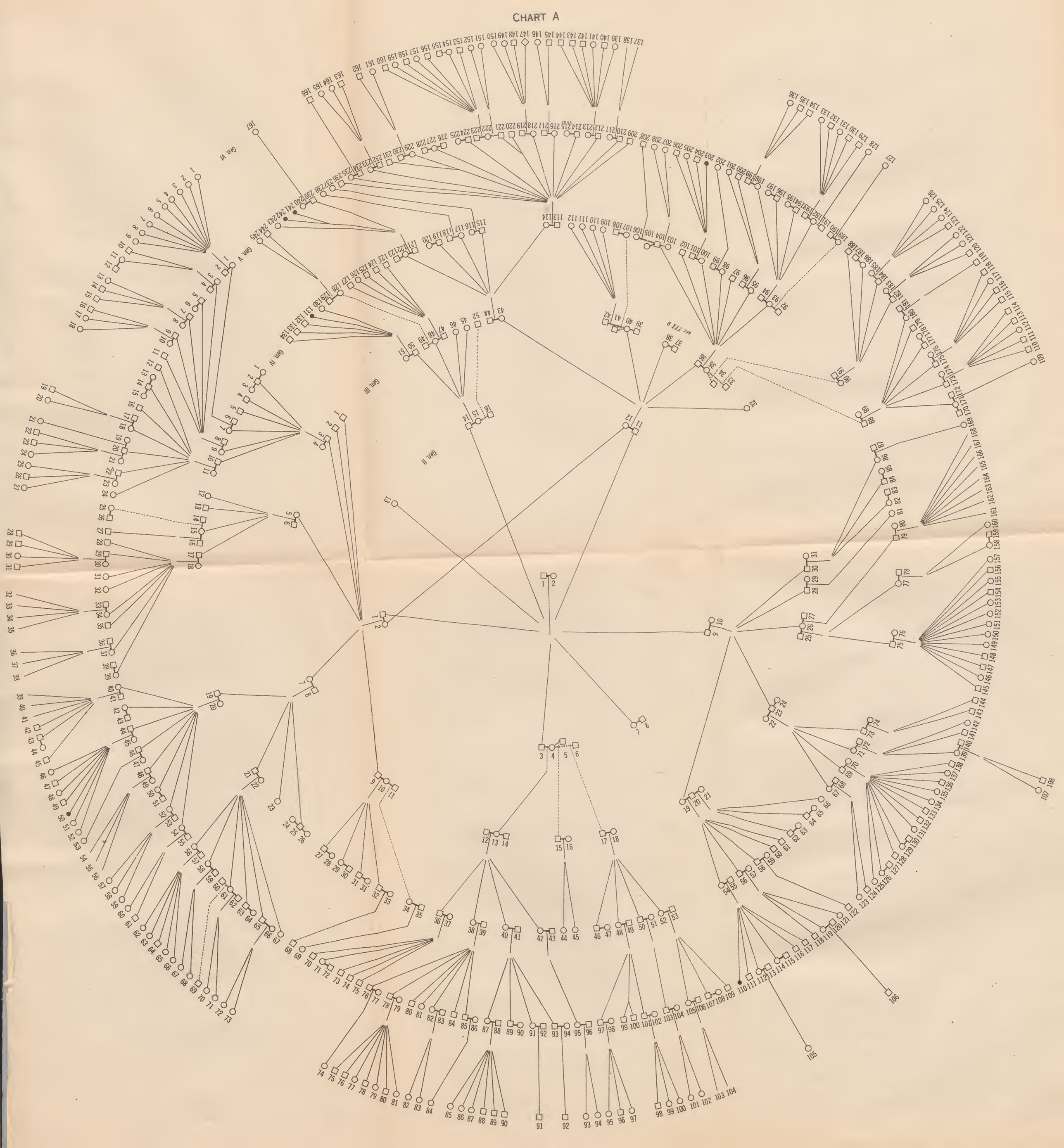
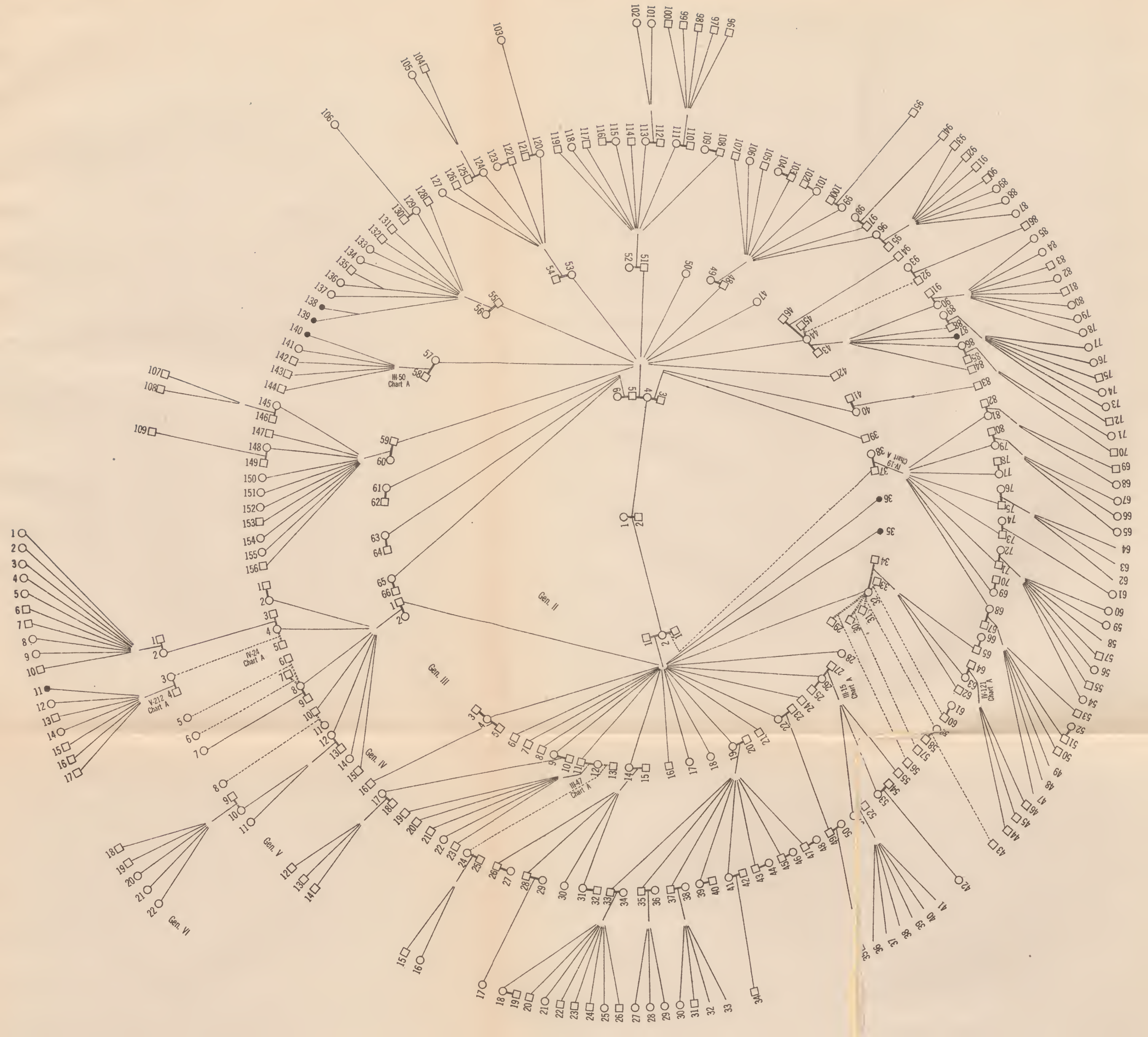


CHART B


Gen. II
Gen. III
Gen. IV
Gen. V
Gen. VI
III-50 Chart A
IV-24 Chart A
V-212 Chart A
III-47 Chart A
IV-19 Chart A
III-15 Chart A
IV-121 Chart A

HQ 751 K44h 1920

02530330R

NLM 05017331 9

NATIONAL LIBRARY OF MEDICINE